Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

Filed July 30, 1932 13 Sheets-Sheet 1

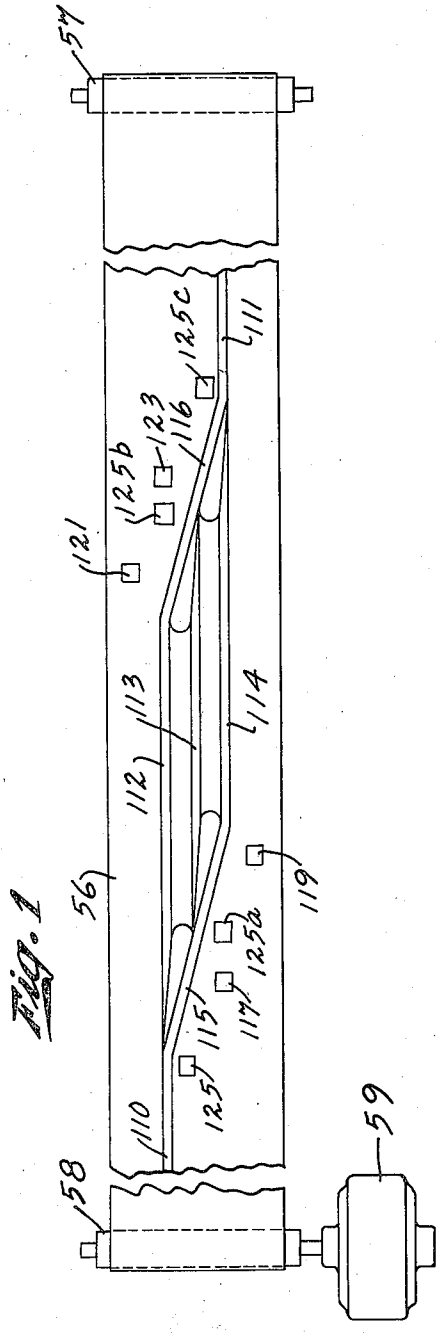


Fig. 1

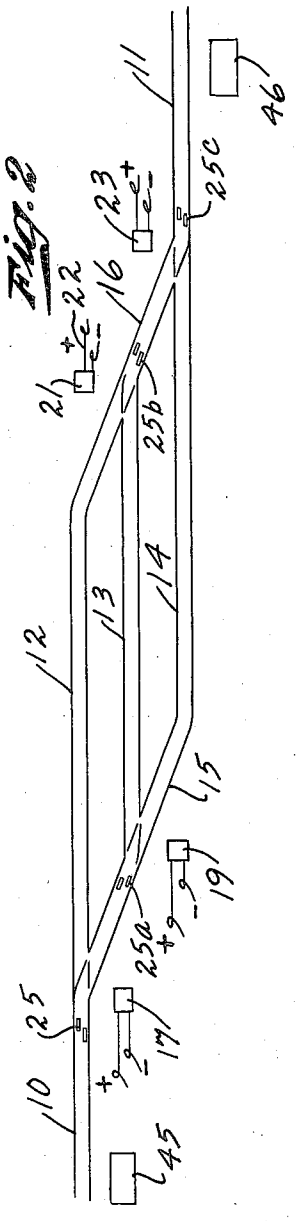


Fig. 2

INVENTOR

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BY

Johnston & Jennings

ATTORNEYS

Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

Filed July 30, 1932 13 Sheets-Sheet 2

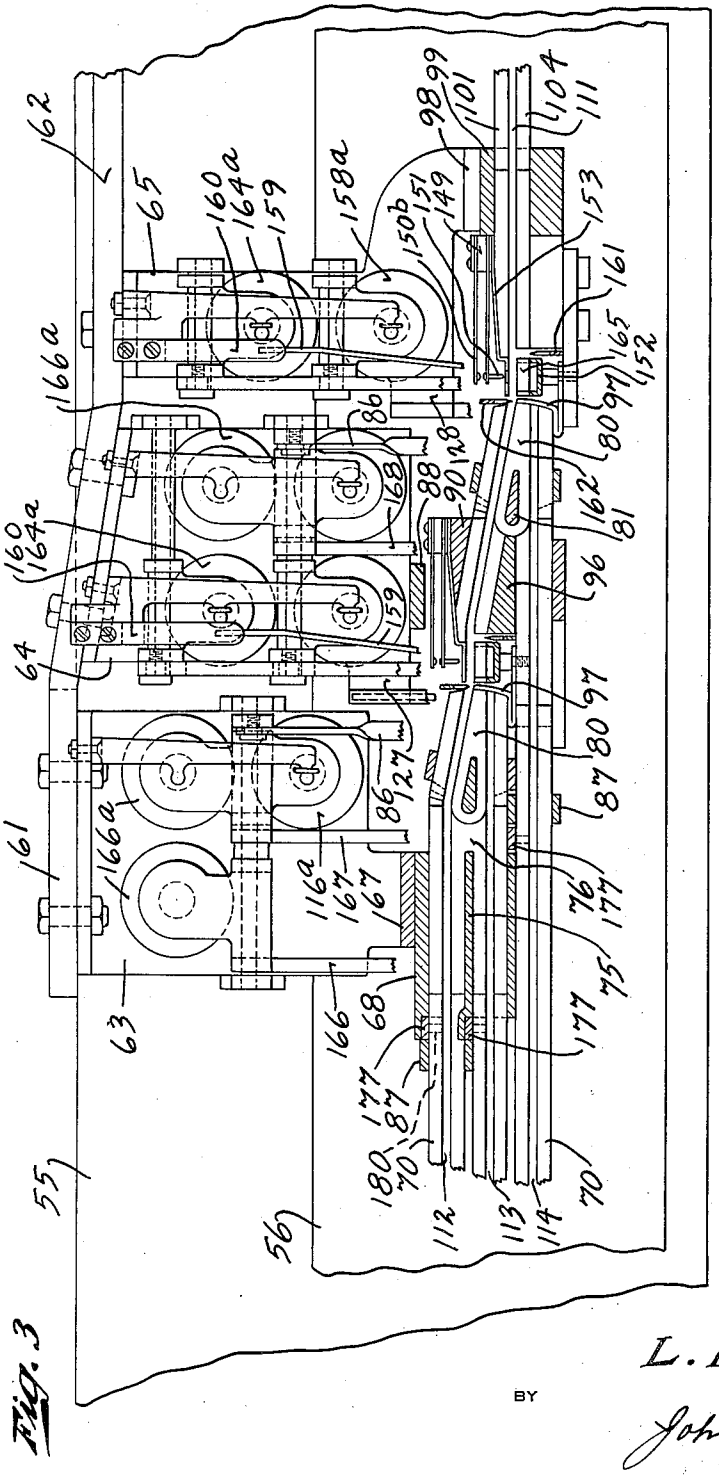


Fig. 3

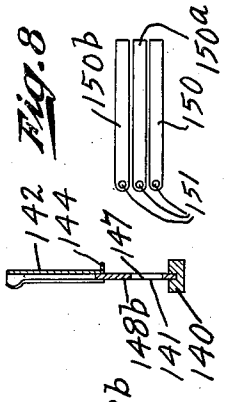


Fig. 8

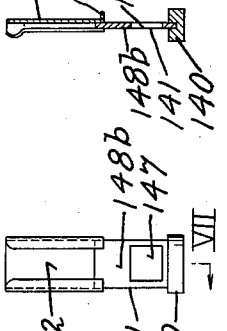


Fig. 7

Fig. 6

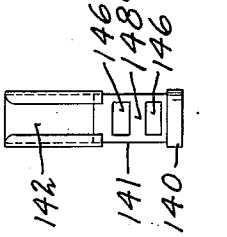


Fig. 5

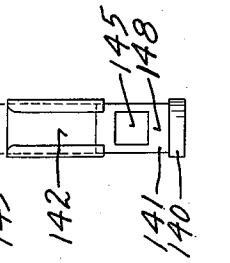


Fig. 4

INVENTOR

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Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

Filed July 30, 1932 13 Sheets-Sheet 3

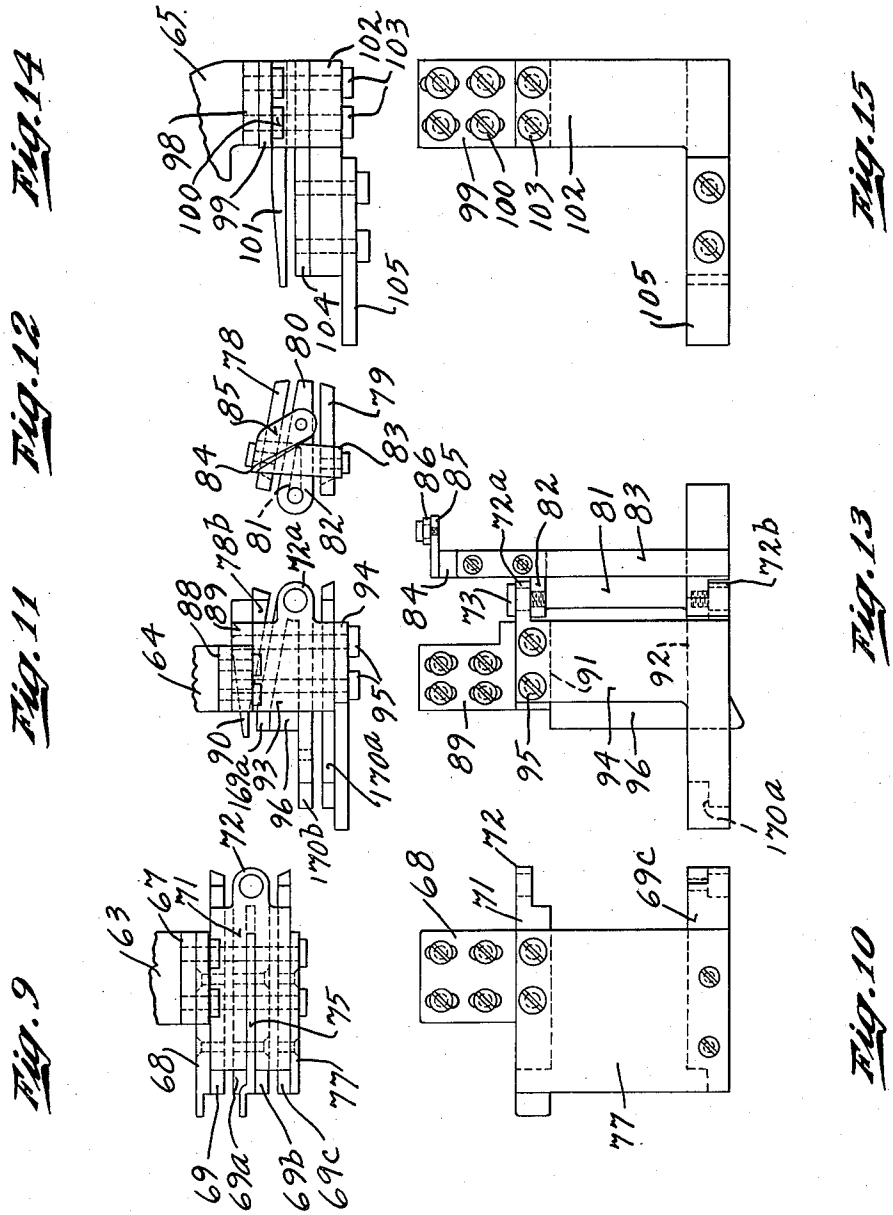


Fig. 14 Fig. 12 Fig. 11 Fig. 9 Fig. 15 Fig. 13 Fig. 10

INVENTOR

L. M. Gibbs

BY Johnston & Jennings

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Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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Fig. 16

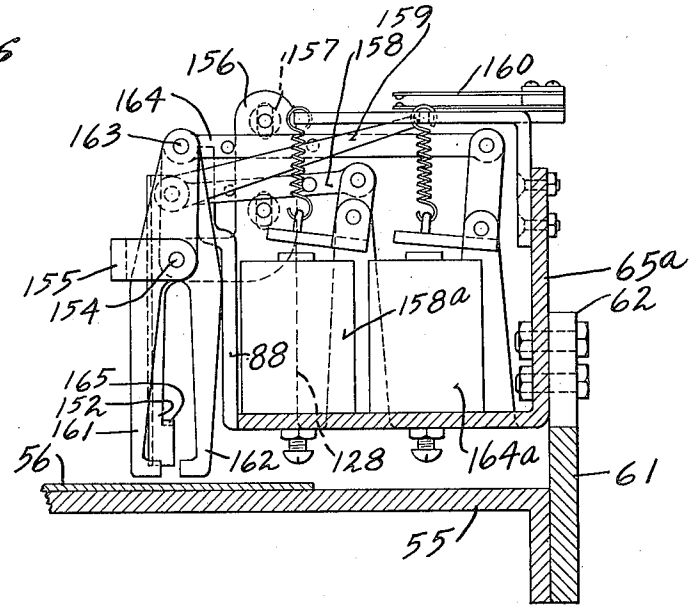
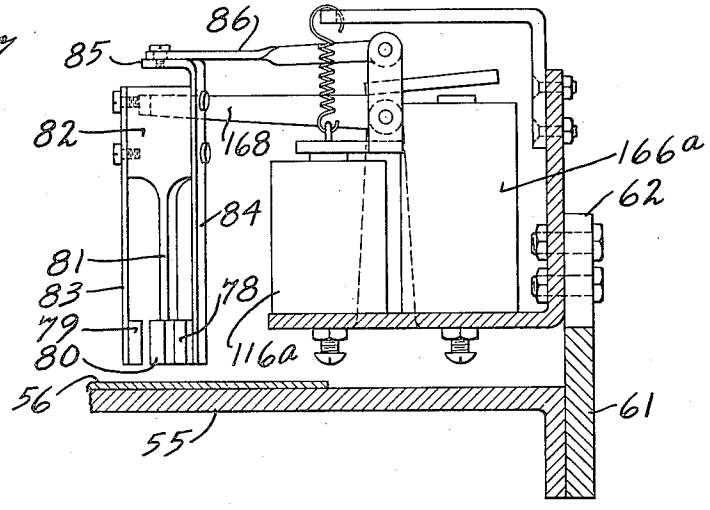


Fig. 17



INVENTOR

L. M. Gibbs

BY

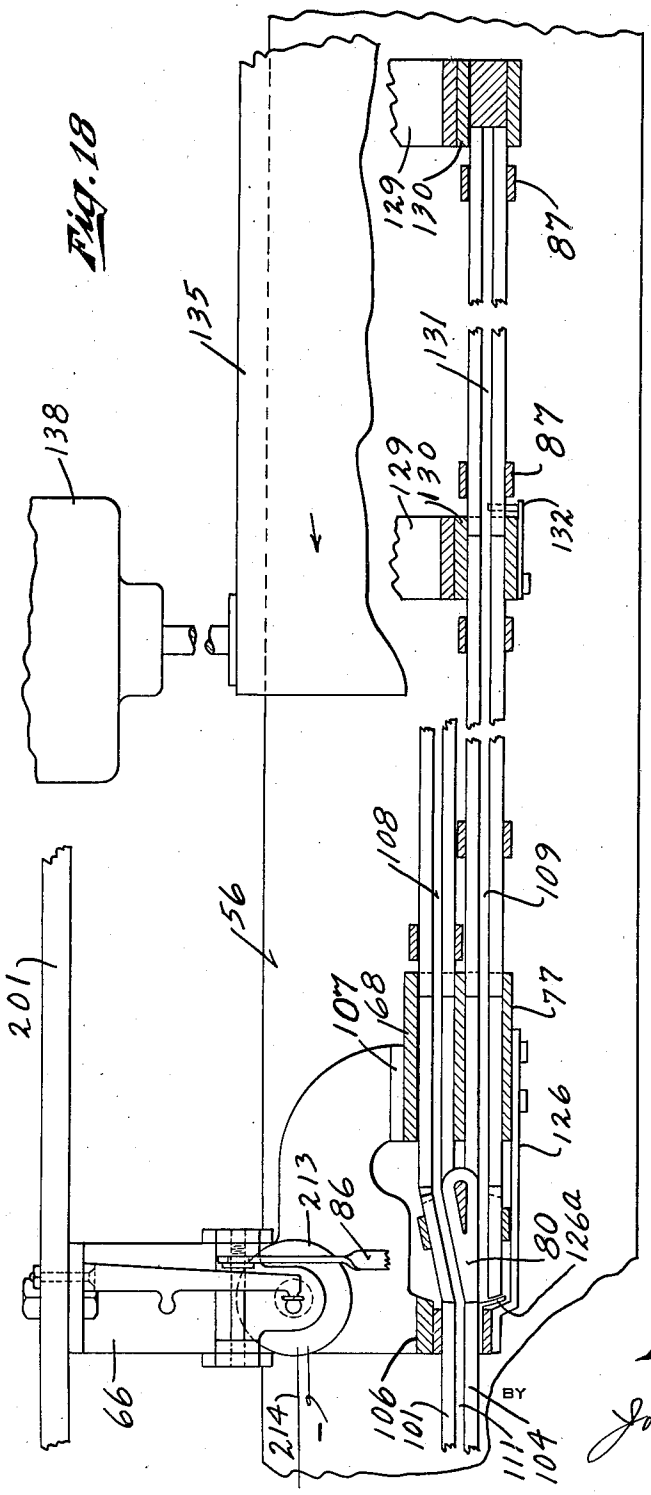
Johnston Jennings

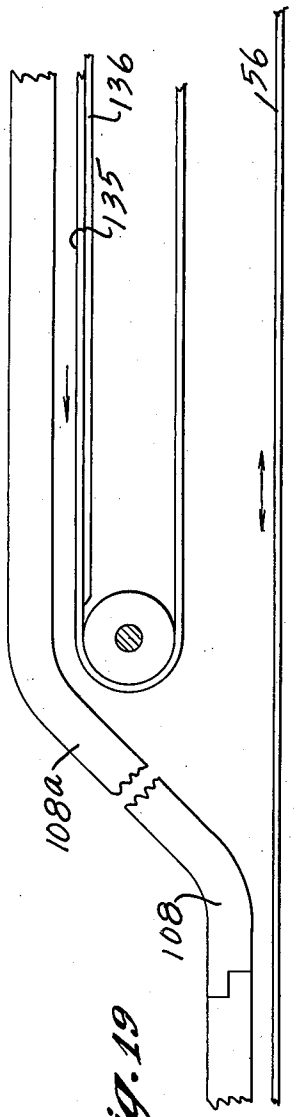
ATTORNEYS

Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

Filed July 30, 1932 13 Sheets-Sheet 5





INVENTOR

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CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

Filed July 30, 1932 13 Sheets-Sheet 6

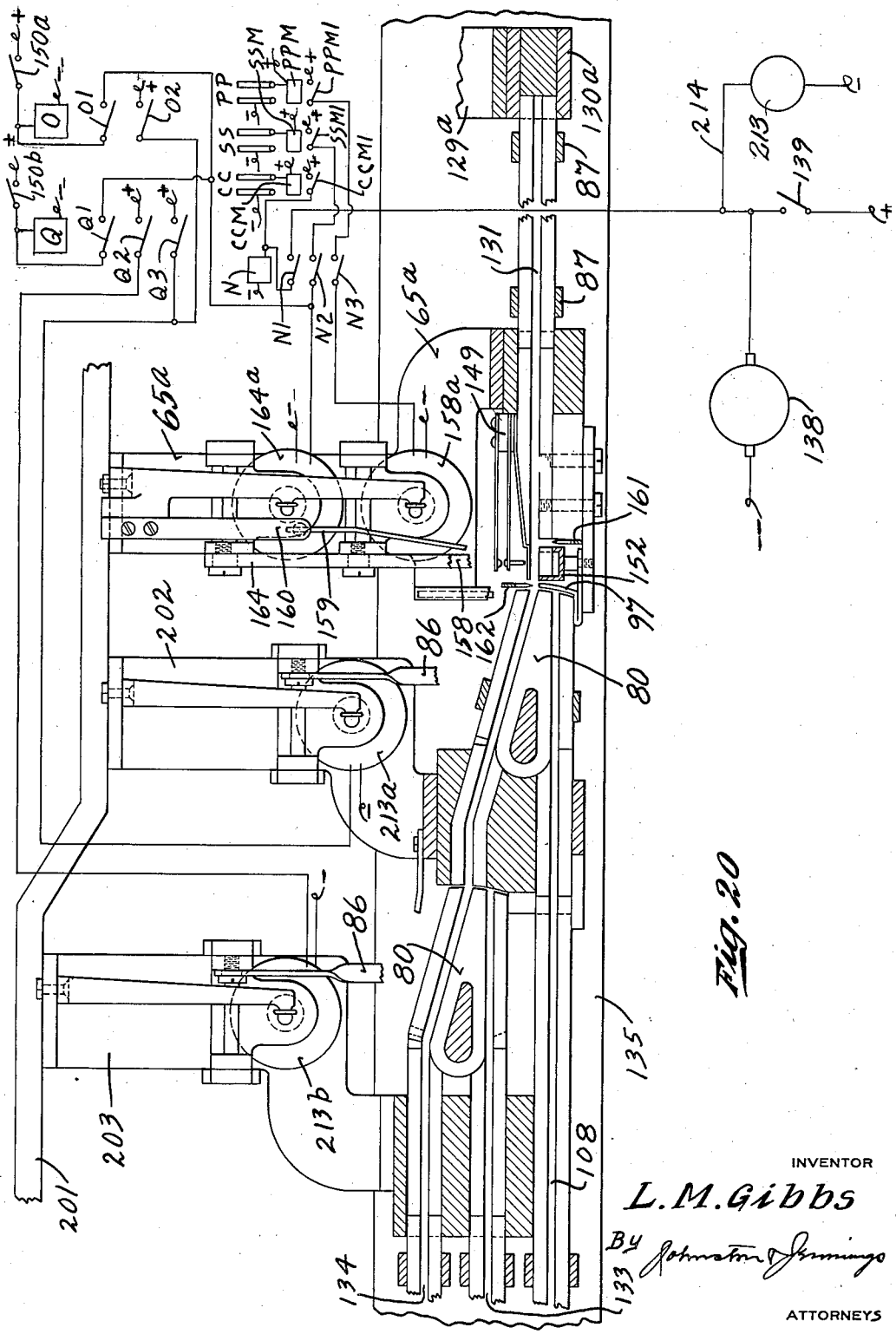


Fig. 20

INVENTOR

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Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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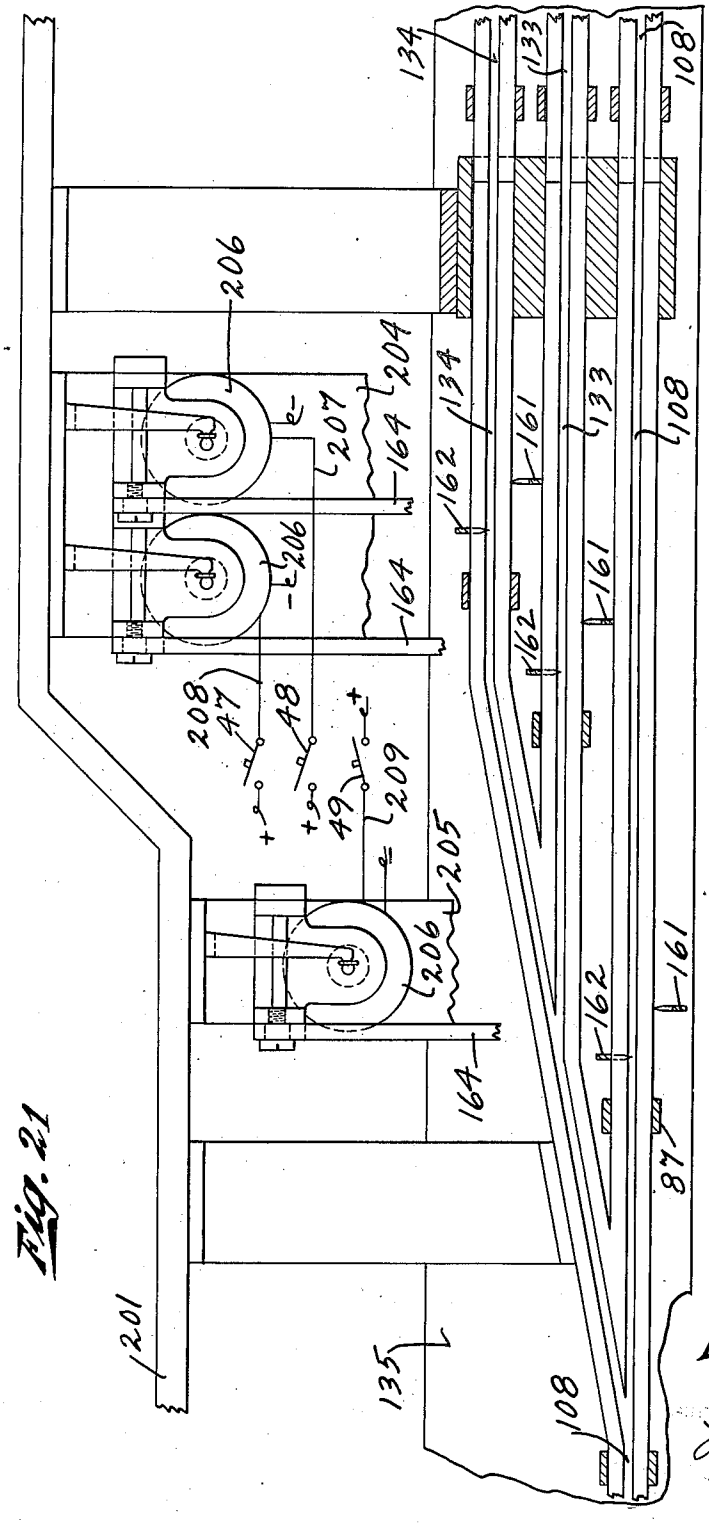


Fig. 21

INVENTOR

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Johnston & Jennings

ATTORNEYS

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CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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Fig. 22

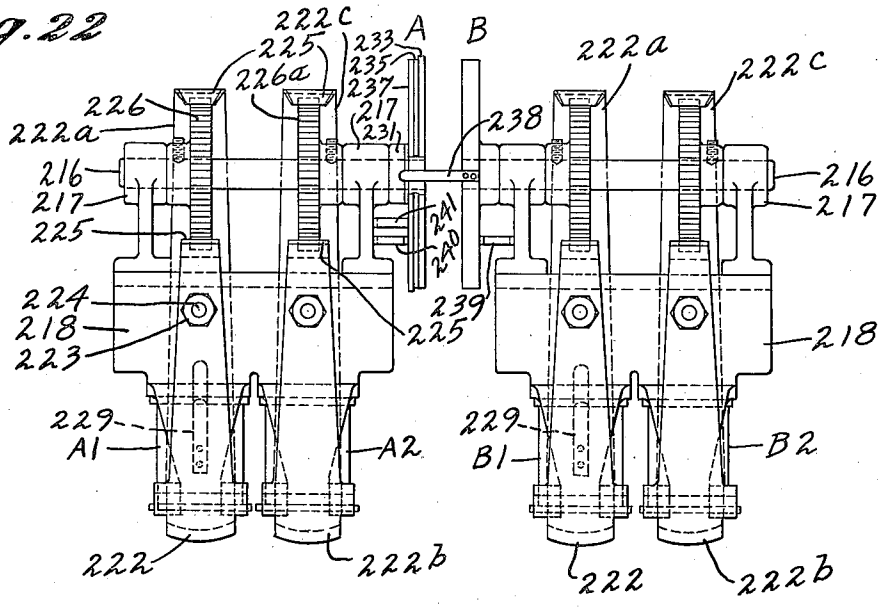
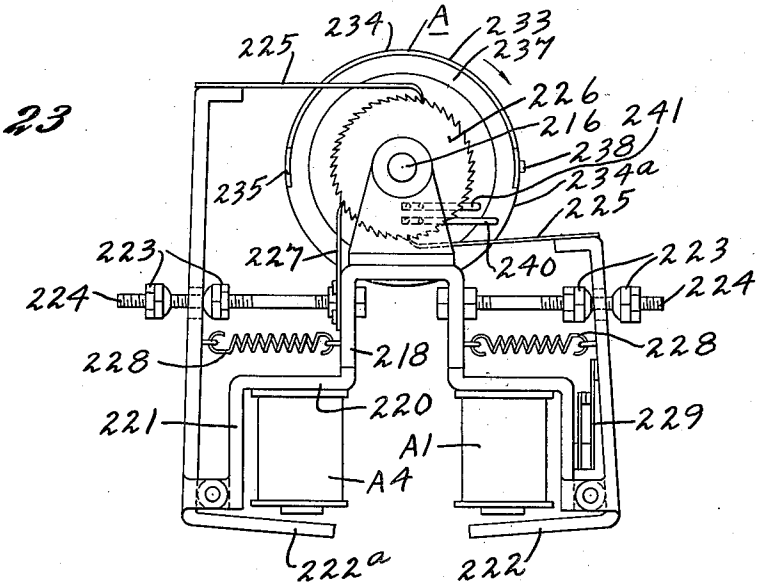


Fig. 23



INVENTOR

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Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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Fig. 24

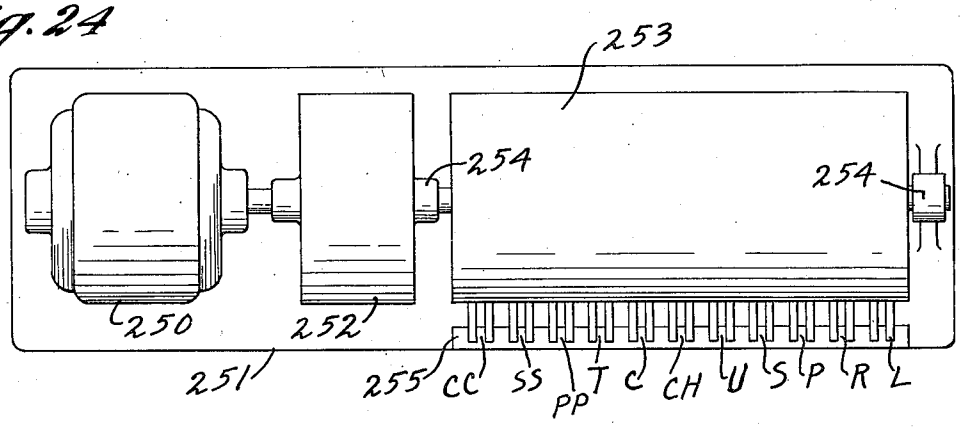
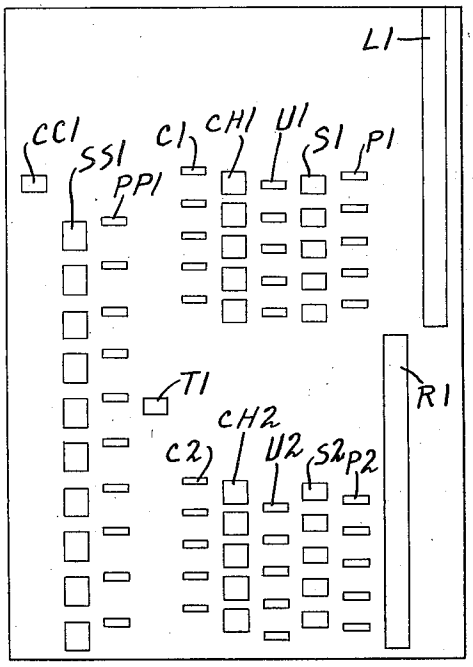


Fig. 25



INVENTOR

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CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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Fig. 26

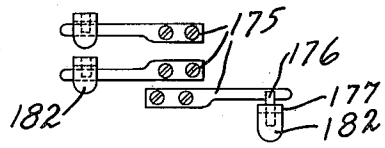


Fig. 27

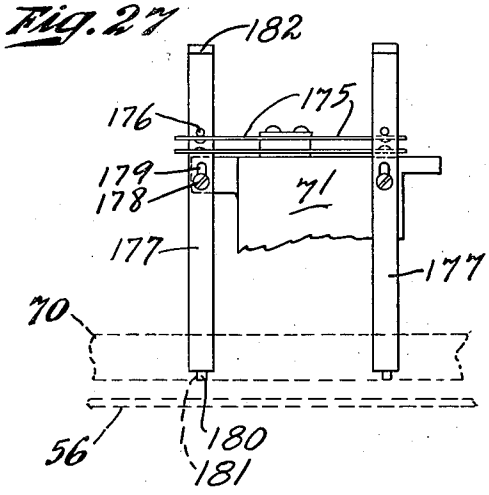


Fig. 28

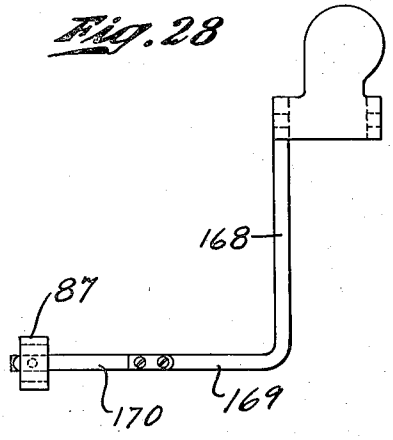
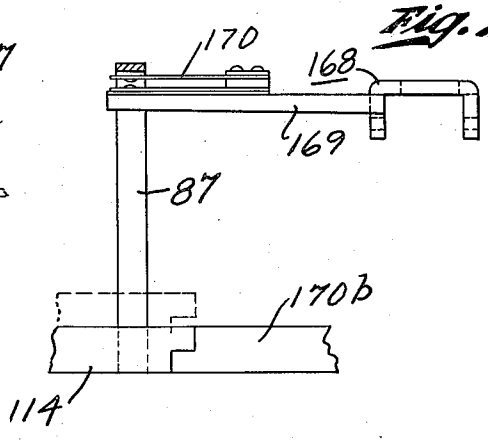


Fig. 29



INVENTOR

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Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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Fig. 30

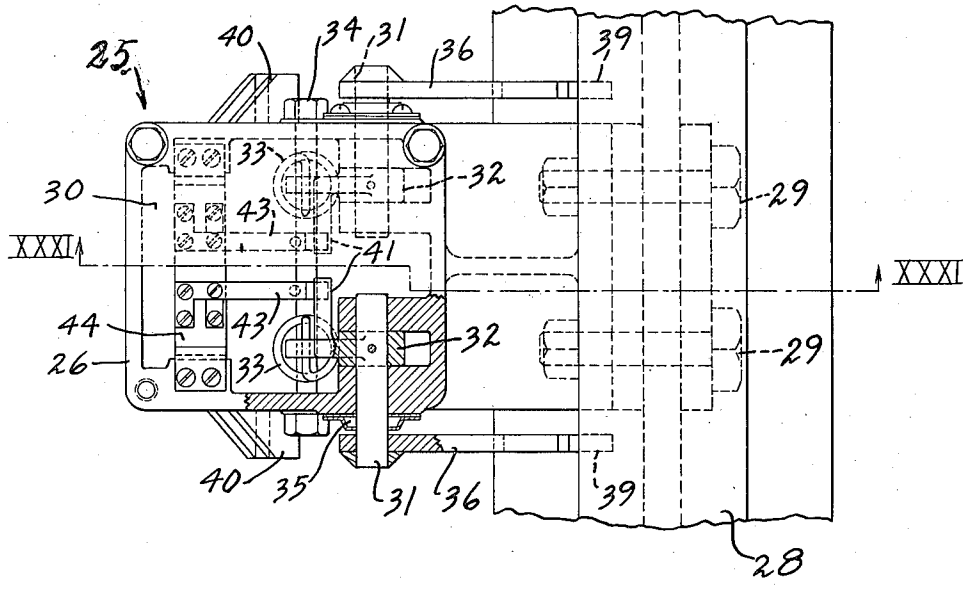
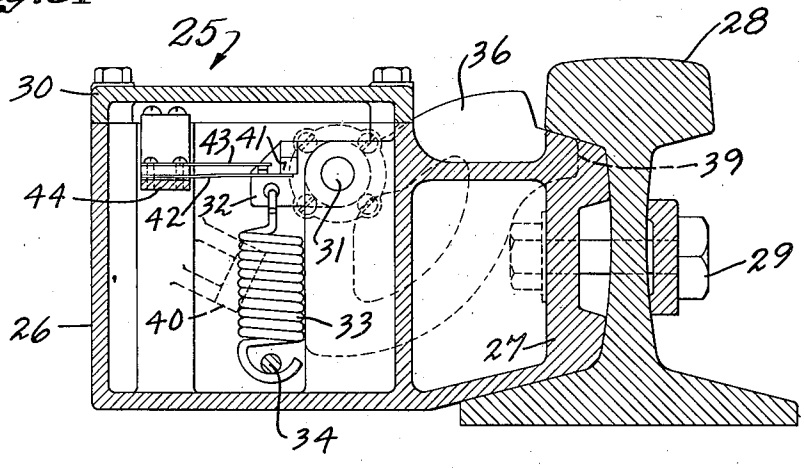


Fig. 31



INVENTOR

L. M. Gibbs

BY

Johnston & Jennings

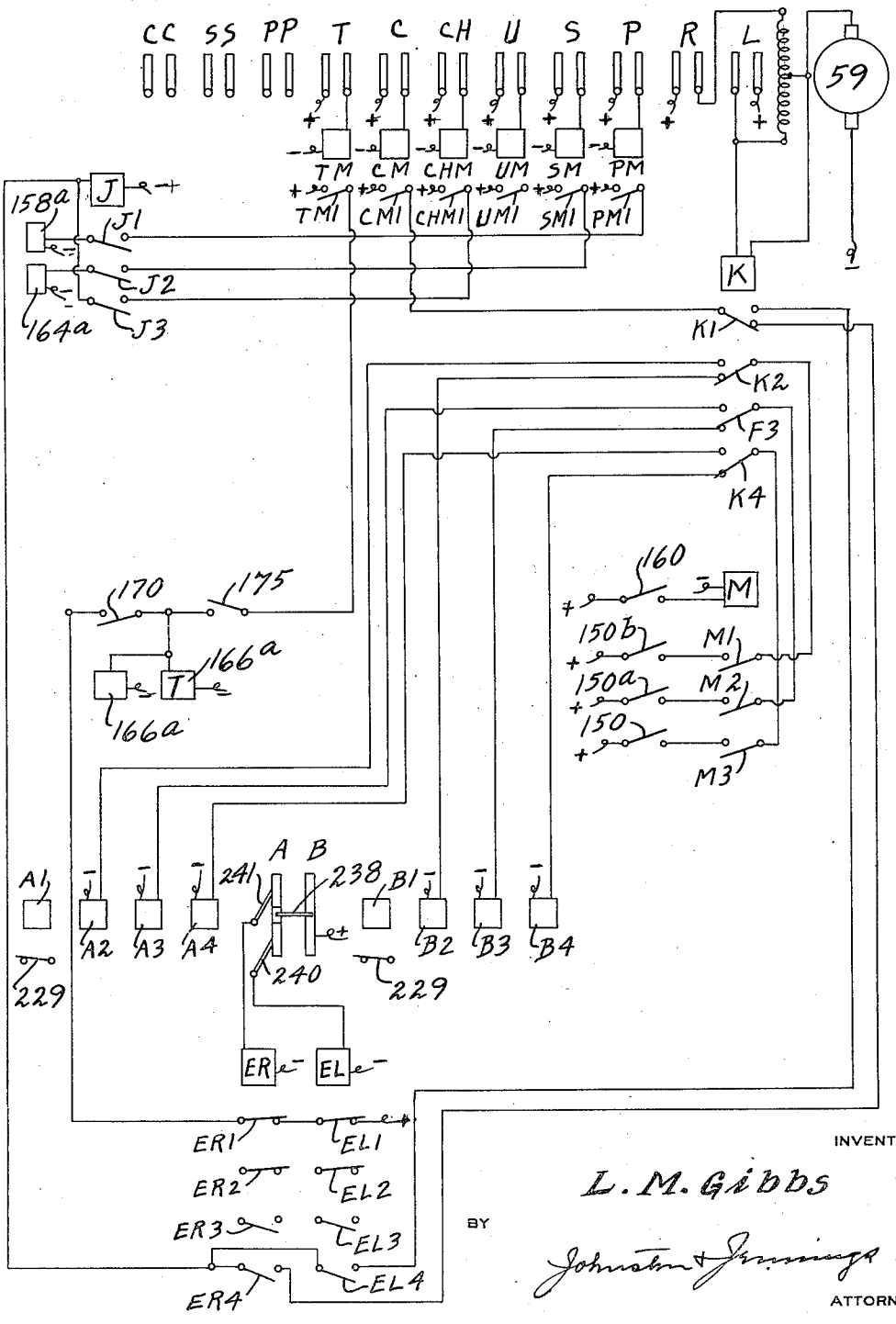
ATTORNEYS

Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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Fig. 32



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Oct. 4, 1938. L. M. GIBBS 2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

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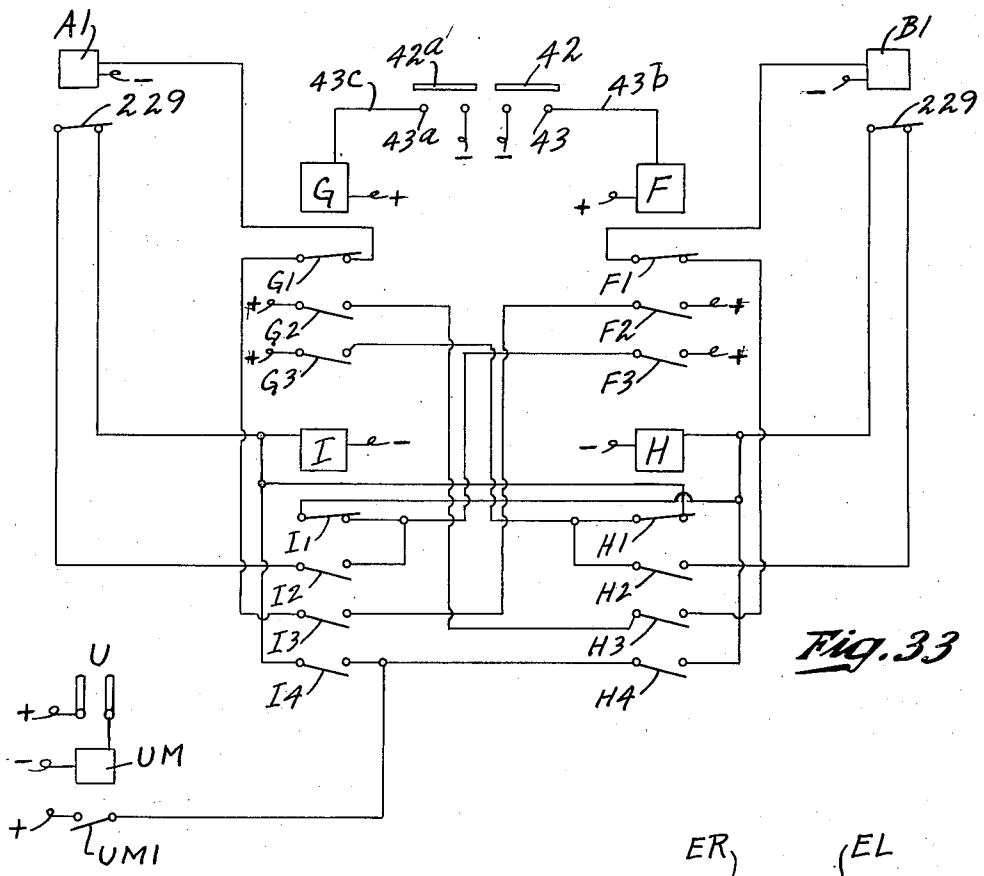


Fig. 33

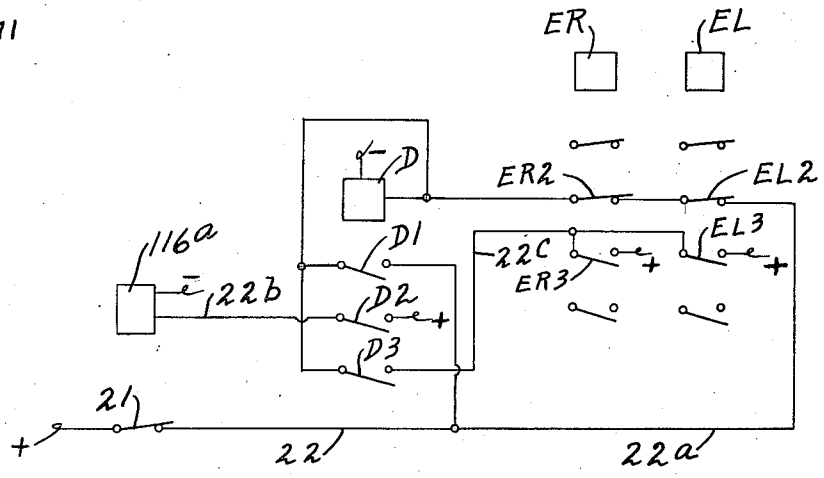


Fig. 34

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ATTORNEYS

Patented Oct. 4, 1938 2,131,946

UNITED STATES PATENT OFFICE

2,131,946

CENTRALIZED MECHANISM FOR AUTOMATICALLY INDICATING THE POSITION, IDENTITY, AND MOVEMENT OF RAILWAY CARS IN THE SWITCHING YARD

Leon M. Gibbs, Birmingham, Ala., assignor to Teleswitch Corporation, a corporation of Alabama

Application July 30, 1932, Serial No. 626,294

20 Claims. (Cl. 104—26)

My invention relates to a centralized switch yard control mechanism capable of responding automatically to the movement of railway cars in the main switch yard, and adapted to represent by movable indicators on an indicating table, the identity, position and movement of each railway car in the main switching yard.

My invention constitutes an improvement on the methods and mechanism for carrying out the foregoing objects which form the subject matter of Letters Patent of the United States heretofore issued to me, Nos. 1,741,229, 1,753,602, 1,924,491, and 2,046,157.

In its essentials, my mechanism comprises the provision of an indicating table customarily located in the yard master's office, and provided with a system of tracks and switches constituting a replica on a very small scale of the tracks and switches of the main yard. The main yard, when the mechanism is to operate automatically, is equipped with mechanism responsive to the passage of wheels or cars which actuates selectively responsive mechanism which controls the movement of dummies, corresponding to the actual railway cars, over the tracks of the indicating table. In addition, mechanism is provided whereby the movement of switches in the main yard will cause a like movement of the corresponding switches on the indicating table. Motor driven belt mechanism is reversely movable under the indicating table tracks and adapted, by engagement with the dummies, to move them back and forth about the indicating table responsive to the setting of the switches and to the operation of main yard track instruments, which cause a dummy movement on the indicating table corresponding to a car movement taking place in the main yard.

All of the mechanism as thus far described and the theory of operation is fully set forth in my patents, and is briefly described herein for the purpose of more clearly pointing out the novel features to which my present application is directed.

One distinctive feature of my present invention is concerned with the improvement and simplification of the mechanism for moving the dummies about on the control board and into and out of the main line tracks. This I propose to accomplish by utilizing a single belt coextensive in width and length with the dummy switching yard and operated by an intermittently reversible motor which will drive the belt during part of a predetermined cycle in one direction and will drive it reversely for the other part of the cycle. By this arrangement a single motor driven belt can serve the entire dummy yard whereby the apparatus will be very greatly simplified and its cost both for manufacture and maintenance materially reduced.

Second, where a reversible belt drive is employed for the dummies, it is essential to provide means, corelated with the belt's direction of travel, to control the movement of dummies past dummy counters or checking points responsive to corresponding movements of their control cars past track instruments in the main yard. I propose to coordinate the drive of the belt with the operation of feelers or checkers arranged at each end of each dummy switch track and adapted to perform their functions during a portion of each belt movement. Thus, the control mechanism will be set to actuate the feelers and checkers at the right hand end of the dummy tracks during the concluding portion of the movement of the dummy drive belt to the right, and will in like manner be set to actuate the feelers and checkers at the left hand end of the tracks during the concluding portion of the travel of the belt to the left. The feelers and checkers are timed to commence their action after the belt has had time to cause all dummies in all tracks to have been moved into position to be controlled by the checkers when same are caused to operate responsive to the operation of corresponding track instruments in the main yard.

It may thus be said that my improved method of dummy control involves shifting all dummies in the yard back and forth between feeler or checking points, and timing the feelers or checkers, as and while called upon by the main yard control devices, to act on and pass the dummies while presented to them. My invention, in this connection, further contemplates so timing the cycle of the belt, its rate of travel, and the rate of actuation of the feelers and checkers, that, notwithstanding, their intermittent action, the latter are yet capable of passing dummies as fast as their control cars will normally move past any switch or track instrument in the main yard.

A further distinctive feature of my present invention relates to the simplification of the dummies, their reduction in weight and cost, and their design so that each will respectively control a predetermined number of wheel movements of the rotary switch elements which are moved step by step, each step indicating a dummy wheel movement past a checking point corresponding to the movement of a control wheel

of a car past a track instrument in the main yard.

In my Patent 1,924,491, dummy wheel checkers acted, responsive to each actuation of a track instrument by a control wheel on a main car, to advance an individual counter representative of a dummy wheel, these individual wheel counters being subsequently grouped by means of interlocking top elements so as to form assembled dummy units having a number of wheel counters corresponding to the control wheels of their respective main cars.

In my present invention I maintain the responsiveness of the system to the individual control wheels of the main cars, but instead of actuating the dummy wheel counters separately and then assembling them into dummy units comprising a variable number of wheel indicators, I now propose to employ different unitary dummies to represent different numbers of wheel counters and to advance them past a checking point with a single feed movement. Most of the dummies will represent standard cars which comprise four control wheels, but some dummies will represent cars having two control wheels and others three control wheels. Where an abnormally wheeled main car or vehicle is to be represented in the dummy yard, its dummy make-up may comprise either a two wheel indicator dummy, a three wheel indicator dummy, or a combination of two or more of these dummies with each other or with a standard four wheel indicator dummy. Thus, a locomotive having ten control wheels could be represented by two four wheel standard dummies and a two wheel special dummy which will travel together in representing the movement of the locomotive about the yard.

This dummy change reduces the number of dummy checking movements and increases the speed of passing dummies to a rate that will permit their movement past control points on the indicating table as rapidly as their control main cars will normally move past corresponding control points where track instruments will be located in the main yard, notwithstanding the fact that the dummy passing operation will be confined to a relatively small portion only of each cycle of the dummy drive belt's operation.

A further distinctive feature of my invention relates to the mechanism for giving the rotary switch element, at the time responsive to dummy wheel movements, actuations which will advance it one to four steps at a time, and which are selectively energized by the dummies or a main control wheel, each standard dummy effecting a four step actuation and the special dummies two and three step actuations. The single step actuation is always rseponsive directly to a single control wheel of a main car imparting a single actuation to a track instrument.

For simplifying the indicating table and reducing its dimensions, I have made improvements in the dummy which I propose to make out of sheet metal stampings having a socket for an upstanding card or tab and a metal base adapted to engage the belt and move therewith to follow the tracks without turning about a vertical axis. Such dummies can be made of as light stock as $\frac{1}{32}$nd inch plates and the bases may be as small as ¼th inch in width by about ½ inch in length. This arrangement will permit the tracks to be formed between narrow strips spaced just wide enough for the free movement of the thin dummy shanks between them. Thus the largest yards can be condensed into a relatively small dummy yard representation.

My invention further contemplates forming the dummy yard of individual track sections and adapting these sections to be lifted so that the cards, displayed on the dummies therein, can be more conveniently observed, while at the same time the dummies will come to rest, being held out of contact with the common driving belt.

My invention further contemplates adapting the individual dummy tracks to be lifted by electric switch mechanism which is automatically controlled in such manner that when dummies are due to enter or leave the elevated track it will automatically be dropped into operative position, and thus the normal movement of the dummies need not be interrupted by such track elevations.

My invention further contemplates forming the dummy tracks of pairs of approximately three-eighths inch strips connected by overhead U-straps which hold them in spaced relations and permit the dummies and their indicator cards to pass freely therethrough.

My invention further contemplates adapting the dummy track units to be lifted by lifting magnets which engage U-straps at both ends of the dummy track section and are wired for simultaneous operation.

My invention further comprises improvements in the magnetically actuated feeler or checking mechanism for the dummies, the same comprising means to stop the approaching dummies in front of the feeler mechanism; to admit them one at a time to be acted upon by the feeler mechanism; and to release them after such actuation, the stop mechanism being reversible so as to stop the dummies in front of the feeler from either direction.

My invention further comprises improvements in the feeler mechanism which will engage and shift the dummy a predetermined distance laterally of the track before it will register, by means of holes or notches in its shank, its wheel registering value, the mechanism being so designed as to be unresponsive unless the entire shank of the dummy is in a predetermined position and has received a full movement from the pusher mechanism, thereby avoiding a false register from a dummy not in proper registering position.

My invention further comprises improvements in the switch mechanism by which I avoid the use of a dummy switch point and shift sections of the converging tracks bodily until one or the other lines up with the receiving track, there being sufficient space between the moving tracks at their closest point to avoid the dummies side-swiping. The moving tracks are arranged to coact with a stop which will hold the dummies from passing out the end of the non-aligning track. This avoids the difficulty experienced in the previous mechanisms incident to holding back dummies from moving into position to interfere with the throw of the switch point, but with my improved arrangement, where the converging track sections are swung together, I avoid the use of a switch point and thus do not have to keep the switch point position clear.

My present invention further comprises an improved means for producing the necessary setup of a train of dummies corresponding to an entering train of cars to be switched. In the practice of my present invention, the cars of an entering train are recorded both in respect of their car numbers and of the number of control wheels on each vehicle. With this infor-

mation the special dummies of the appropriate standard or special type, or groups of standard and special type dummies, are assembled from a dummy yard and fed into the receiving track of the dummy switch yard.

My invention further comprises novel and simplified means for conveying the dummies, as discharged from the main dummy yard, into storage tracks, and selectively distributing them in said tracks so as to group the standard and special dummies for more convenient selection in the initial makeup of dummy trains.

A distinctive feature of my present invention lies in the manner in which the initial makeup of the dummy train is accomplished. This is done by means of an observer with appropriate control means responsive to which he can cause the delivery to the assembling track in the dummy yard of a series of dummies which shall each (or a group of which shall each) represent in wheel capacity each observed vehicle in the entering main train, and by thus manually assembling the dummy train I have made it possible to use individual dummies (or groups) which represent a definite number of wheels corresponding to the wheel capacity of the individual main vehicles observed. In addition to marshalling the appropriate dummies in the manner above described, and for the purpose of applying car indicia to the assembled dummies in the same order as the cars stand in the train, the observer makes, or causes to be made, a record of the order of the passing railway cars, showing their car numbers.

A convenient method of operating this dummy assembling plan is for an observer to be stationed at each end of the main switch yard with suitable dictaphone equipment into which he can record, as the cars pass and in their order, their initial and number, and at the same time as each car passes he can manipulate control equipment by means of which, on the indicating table, dummies having the appropriate wheel counters will be assembled in the dummy yard track corresponding to that occupied by the main train, and thereafter the dummies will move about the dummy yard automatically responsive to their respective control main cars.

Fig. 1 is a diagrammatic plan view of a typical dummy yard.

Fig. 2 is a plan view of a corresponding railroad yard.

Fig. 3 is a fragmentary plan view of one end of the dummy yard, parts being broken away and sectioned for clearness.

Figs. 4, 5 and 6 are front elevational views of the three forms of dummies provided to represent cars in the railroad yard.

Fig. 7 is a sectional view taken along the line VII—VII of Fig. 6.

Fig. 8 is a front elevational view of the spring contacts adapted to be engaged by the shanks of the dummies.

Figs. 9 and 10 are plan and elevational views of one form of track and switch supporting members.

Fig. 11 is a plan view of another form of track and switch supporting member.

Fig. 12 is a plan view of a switch.

Fig. 13 is an elevational view showing a switch mounted on the member illustrated in Fig. 11.

Figs. 14 and 15 are plan and elevation views of another form of a track supporting member.

Fig. 16 is a sectional detail of the dummy escapement mechanism.

Fig. 17 is a sectional detail view of the switch and track raising mechanism.

Fig. 18 is a fragmentary plan view of an outbound track from the dummy yard and an inbound track leading from the storage yard to the dummy yard.

Fig. 19 is a fragmentary elevational view of the inbound track leading from the storage yard to the dummy yard.

Fig. 20 is a fragmentary plan view of the inbound end of a storage yard.

Fig. 21 is a fragmentary plan view of the outbound end of a storage yard.

Figs. 22 and 23 are elevational views of a rotary counter mechanism.

Fig. 24 is a plan view of the master control drum mechanism.

Fig. 25 is a diagrammatic detail view illustrating the relative positions of the contacts provided on the control drum.

Figs. 26 and 27 are plan and elevational views of the dummy stop arms and track raising contacts.

Figs. 28 and 29 are plan and elevational views of a track raising arm.

Fig. 30 is a view partly in plan and partly in section illustrating a track instrument adapted to be actuated by cars moving throughout the railroad yard.

Fig. 31 is a sectional view taken along the line XXXI—XXXI of Fig. 30.

Figs. 32, 33 and 34 are wiring diagrams.

In the embodiment of my invention illustrated I have shown in Fig. 2 conventionally a simple main switch yard comprising a main line entrance track 10, for north bound traffic, and a main line entrance track 11 for south bound traffic. This represents the simplest embodiment of my invention in which no dummy yard is used and the appropriate dummies are manually assembled for automatic control in their movement about the switch yard in the manner that will now be described. The yard proper comprises three classification tracks 12, 13 and 14, which are connected with the tracks 10 and 11 by the ladder tracks 15 and 16. The switch connecting track 16 to the tracks 13 and 12 is controlled by a switch box 21 and comprises a suitable switch by means of which current is caused to flow over lead 22 to a corresponding switch in the dummy yard to be later described. Similar switch boxes 17, 19 and 23 for the main yard switches control the corresponding switches in the dummy yard. In advance of the switch in track 10, I dispose a pair of circuit closing track instruments 25 which are arranged alongside of the two tracks in staggered relation and so positioned that the wheels on a common axle will engage them successively and actuate them simultaneously in either direction of movement. Similar track instruments 25a are arranged in track 15 in advance of the switch for track 13. Similar track instruments 25b are arranged adjacent to the switch leading from track 16 to track 13 and track instruments 25c are associated with the switch in track 11.

These several track instruments are all duplicates and a description of one will apply to all. In Figures 30 and 31 I have illustrated the track instrument in its detailed construction and there it is shown to comprise a box formed by a metal casting 26 having an extension 27 adapted to engage and conform to the side of the track rail 28 so as to fit snugly between the base and tread of such rail and to be secured in

this position by bolts 29 which connect the member 27 to the web of the rail. The box has a top 30 also bolted thereto and within it is mounted a pair of aligning cross shafts 31 each journaled in spaced bearings and having fast thereon between its bearings a crank arm 32 with its free end engaging the upper end of a coil spring 33. The lower end of both springs 33 are mounted on a common cross bolt 34. The shafts 31 overhang beyond the sides of the box passing through suitable packing boxes 35 and each has fast on its outer end a trip arm 36 which is in the form of a segment of a circle, as will be more clearly seen in Fig. 31. This trip arm has its free end formed with a stop portion 39 adapted to engage under the rail head and its under side is adapted to engage a stop 40 cast on the side of the housing 26. These trip arms 36 are spaced about four or five inches apart so that a wheel approaching from either direction will depress one in advance of the other, and yet at some point in its passage the wheel will hold both arms depressed. By this arrangement I get the effect of a continuous contact while avoiding the use of a continuous trip arm running parallel with the track which would have substantial weight and be productive of operating troubles under high traffic speed.

The trip arms 36 are well balanced about their respective shafts, and due to the almost vertical impact received from the wheel they will move down readily against the action of their respective springs 33. Each arm has on the crank 32 a switch arm 41 to overlie the bottom contact member 42 of a switch, the upper contact member 43 of which is assembled with the member 42 upon a U-shaped bracket 44 which extends from side to side of the box level with the top thereof and inset so as to clear the flanges of the top 30. The two switches in each box are carried by this common U-bracket 44 and together they control the same circuit which is closed when any or all of the switches are closed, which circuit will be later described.

The segmental shape of the trip arms 36 is provided so that nothing lying alongside of the track will interfere with their free downward movement. The stop extension 39 is guarded throughout its limited downward movement by the extension 27. Thus it is practically impossible for any obstruction to interfere with the operation of the trip arms responsive to a passing wheel.

The track instruments are grouped in a pair in the approach to each switch, the members of each pair being staggered so that one or the other will be first actuated by approaching wheels and then both will be held depressed and then the first actuated will be released. This operation of the two switches is required for the purposes of indicating direction to the selective mechanism controlling the operation of dummies so as to cause the dummy to have the same direction of movement as its control wheel at the corresponding point in the dummy yard. Further, by grouping the two instruments on opposite sides of the track, I render it almost impossible for both to be accidentally operated by other means than the two wheels on a common axle and unless both are so operated, no movement in the dummy yard results. This insures against accidental operation.

The railway switch operated make and break switches for the circuits controlled by the several switch instruments 17, 19, 21 and 23, may be such as are formally illustrated in Fig. 12 of my Patent 1,743,602, or any make and break mechanism may be substituted, it being only necessary that the actuation of the track switches shall energize its corresponding circuit to control, in the manner hereinafter described, the operation of the corresponding switch in the dummy yard.

To control the operation of the dummy board, I provide alongside the track 10, adjacent to the main switch yard, a station 45, which may be the yard master's office if desired, and in corresponding position alongside the track 11, I provide a station 46 which may be occupied by one of the clerks from the yard master's office. In each of these stations a clerk charged with the duty of setting up the dummy trains in the dummy yards will be stationed so as to observe the cars of trains approaching the yard. This man, as at present contemplated, will be provided with means by which he can dictate to suitable recording instruments the initial and number of each car in the train as it passes. At the same time, as he dictates or otherwise enters this car data he observes whether the car is equipped with a standard number of wheels, i. e., eight on four axles, giving the car four wheel control units. By a wheel control unit, I mean the two wheels on a common axle, with the flanges designed to engage and actuate the trip arms 36. All wheels in a train will bear such flanges except some of the large driving wheels of the locomotive, which are wider and can readily be seen and distinguished from the other flanged wheels of the train.

Having observed the flanged wheel equipment of the vehicles, the operator will press one or more of three buttons, 47, 48 or 49, (Fig. 21) each button controlling a switch for a circuit, which, when energized, will actuate an escapement-like feed mechanism working in one of the tracks of the dummy storage yard, which will be hereinafter described. The button 47 is a standard wheel unit button that is depressed once for each vehicle having four wheel control units. The button 48 will be depressed for each vehicle having three wheel control units, which is a combination existing generally in switch engines, and this odd number is necessary to make up combinations of dummies to match locomotives and extra wheel vehicles. The button 49 is depressed to indicate a vehicle having two wheel control units such as a little caboose, scale testing equipment, and special vehicles.

At station 45, or wherever it is desired to arrange for the control of operations in the main switch yard, I provide what I call a dummy switch yard which is diagrammatically illustrated in Fig. 1, wherein it will appear that it has the same track arrangement as the main yard. The tracks 10 to 16 inclusive in the main yard find counterparts in tracks 110 to 116, inclusive, in the dummy yard, and in like manner we find an arrangement of switches in the dummy yard, similar to that in the main yard, having actuating mechanisms 117, 119, 121 and 123, so as to correspond with the switch boxes 17, 19, 21 and 23 in the main yard.

The dummy yard is provided with what I call a selective dummy checking mechanism positioned in the dummy tracks to correspond with the track instruments 25, 25*a*, 25*b* and 25*c* in the main yard, and respectively designated by the numerals 125, 125*a*, 125*b*, 125*c*, all of these selective dummy mechanisms being similar but bear-

ing different numerals for purposes of identification.

The dummy track layout will now be described, reference being particularly had to Figs. 1 and 3 wherein it will appear that the dummy track mechanism is suitably mounted upon a table **55** upon which the top flight of a fabric or other belt **56** is supported with its lower flight returning under the table which bears at one end an idler belt roller **57** and at the other end a belt driving roller **58**, driven by a reversible electric motor **59** the circuits to which are controlled by a rotatable master control drum **60** in the manner hereinafter described.

I attach along the sides of the table near the points of the dummy track support a plate **61** (Fig. 16) which projects above the table top and has an arm **62** bent inwardly (see Fig. 3) over the table in properly spaced relationship to the dummy tracks thereon. To the members **61** and **62** are attached brackets such as **63**, **64**, **65** and **66** which support the dummy switch control mechanism, the dummy checking mechanisms, and the suspension and lifting means for the dummy tracks.

These several brackets are separately and independently mounted upon the plates **61**, **62** and can be attached at any point along the table where switch or checking mechanisms are required. The plate members **62** can be bent over the board above the belt so as to occupy the desired spaced relationship to the checking and switch mechanisms.

The bracket member **63** is shown bolted to the plate **61** and at its inner end that overhangs the belt it has an upturned flange **67** to which is bolted an element forming a track and switch support. This element is shown in detail in plan view Fig. 9 and in horizontal transverse cross section in Fig. 3. The element comprises a plate **68** bolted to flange **67** and it has connected along its bottom inner side a track member **69** which is notched at its left hand end to receive a removable track element **70** which overlaps the track element **69** opposite the plate **68**. The plate **68** extends a substantial distance above the normal track level sufficiently to clear the dummies and the cards that they bear and it has attached to it overhead a plate **71** which carries at one end an ear **72** with an aperture to receive the upper screw pivot bearing **73** of the adjacent switch member. This top plate **71** is notched to receive along its center a depending plate **75** which drops to the track level and carries a bottom casting **76** (Fig. 3) which is slotted to receive the plate **75**, which latter forms track elements **69***a* and **69***b* which are similar to **69** and notched at their left hand ends to receive complemental track members similar to **70**. At its forward end the casting has an ear and hole to receive the lower pintle of the switch point.

I attach to the outer edge of the casting **71** a depending plate **77** which at its lower end carries a track member **69***c* notched to receive a movable track member **70**. The right hand ends of the track members **69** and **69***c* are both notched and outwardly bevelled to receive the complemental track members movable with the switch member **80**.

By reference to Figs. 12, 13 and 17 the detail construction of the switch will be better understood and from these views it will appear that each switch unit comprises side track elements **78** and **79** and a center tapering casting **80** having a narrow vertical neck **81** connected to an enlarged top head **82**. To the opposite side of this head are attached bars **83** and **84** which respectively carry the track elements **79** and **78**, the bar **84** being extended above the top **82** and bent forwardly to provide a crank **85** to which the operating arm **86** for the switch element is pivotally connected.

The first switch unit controlled by the switch operating mechanism **121**, Fig. 1, being the left hand switch element in Fig. 3, is supported by the bracket flange **67**, which bracket also supports one end of the standard removable track elements **70** forming the tracks **112** and **113**.

These several track elements **70** are connected in pairs by means of U-shaped clips **87** in spaced relationship so as to form slots which in the dummy yard represent a track in the main yard. One of these clips **87** (see Figs. 28 and 29) is arranged at each end of each removable track and they may be placed in between if the tracks are long, should this be desirable. The tracks **70** are preferably formed by rolled steel bars, a suitable dimension for which is one-eighth by three-eighths with the narrow edge uppermost.

Adjacent to the switch carrying bracket **63** I provide a bracket **64** which carries the dummy selective checking mechanism which will now be described, as well as a second switch mechanism controlled by the operating mechanism **23** (see Fig. 2) and similar to that already described. This bracket **64** at its inner end has an upturned flange **88** (Figs. 3, 11 and 16) which has its upper end out-turned and to this out-turned upper end is attached a top flange **89** (Fig. 13) cut away to provide a triangular web portion **90** extending from a shoulder **91** above to a track element **92** below, see Figs. 11 and 13, the track element corresponding to the standard track element already described and having its right end both notched and bevelled to coact with the outer track element **78** of a second switch member. A middle top casting **93** (Fig. 11) and an inside plate **94** are connected by the bolts **95** to the shoulder **91** of the outer member and casting **93** carries at one end an ear **72***a* corresponding to **72** and adapted to receive the upper bearing pin **73** for the second switch point.

The casting immediately below the level of the bolts **95** is reduced to form the tapered web portion **96** which at its bottom carries the track elements **169***a* and **170***b*. At the forward end of this web portion at the bottom is provided an ear **72***b* threaded to receive the bottom screw bearing for the second switch element.

The plate web **90** carries a track element **78***b* coordinating with the switch track element **78** on the right, being cut away and bevelled at its outer end to fit the complementally bevelled end of said switch track element **78**. The plate **94** carries at its lower end a track element **170***a* which is notched at its left hand end to receive a movable track element **70** while the web **96** carries a track element **170***b* notched to align with track element **70**. The plate **94** at its lower end is extended beyond the lap joint between the track elements **70** and **170***b*. To the track member **170***b* on the projecting side thereof I attach a bent thin guard plate **97** (Fig. 3), the free end of which is struck on an arc about the axis of the adjacent switch element and serves as a stop for the track **113** when the switch stands in the position shown in Fig. 3. Between this curved end of the plate **97** and the rear end of the web **96** I provide a space to receive a part of the

dummy checking mechanism which will be later described.

The bracket 65 (Fig. 3) has an offset upturned bracket arm 98 having attached thereto a side plate 99 by screws 100 (Figs. 14, 15), the plate 99 carrying a bottom track element 101. A casting 102 is connected by bolts 103 to the plate 99 overhead, the casting being notched out for the passage of the dummy cards and at its lower end it carries a track member 104. The casting 102 at its lower end has a lateral extension to which this track 104 is bolted and which also carries a side plate 105 which carries a bent guard plate 97, the curved end of which coacts with the second switch element carried by the bracket 64.

In the dummy storage yard shown in Fig. 18, I provide a bracket 66 having an upturned element 106 which is attached to the track element 101. This bracket also has a spaced vertical arm 107 which has bolted thereto an element corresponding to that bolted to the flange 67 of bracket 63, except that such element is reversed to carry the switch element at its left hand end, and its parts corresponding to the elements 68 and 75 of Fig. 3 are not notched or offset at their ends remote from the switch point. The switch element 80 in this design is exactly as already described and it coacts with dummy storage tracks 108 and 109 to deliver the dummies therefrom into the dummy track 111 formed by the track elements 101 and 104. The track element 104 is supported from the bracket 107 by means of a plate 126 bolted to the outside track support plate 77 and has its left hand end inturned which carries the track element 104, and a bent guard 126a (similar to 97) for the adjacent switch point.

The bar 126 forms the stop for the dummy track switch element 80 on one side and the bracket 66 serves as a stop on the other side. The bracket 64 has a flange 127 (Fig. 3) carrying a stop for the left hand switch element as it swings towards the bracket and the bracket 65 has a flange 128, similar to 127, carrying a stop for the adjacent switch on its wing toward the bracket. The guard plates 97 serve to stop the switches in their swing away from the bracket. The various track elements which are bolted to the brackets 61, 64, 65 and 66 have bolt holes vertically elongated, as shown in Figs. 10, 13 and 15, to permit of vertical adjustment so as to set them in the desired spaced relation to the belt.

The dummy storage track mechanism, illustrated in Figs. 18, 19, 20 and 21, comprises two main tracks 109 and 108, the track 109 being disposed on the level with the main dummy yard track so that dummies therein are controlled and operated by the main driving belt 56. This track 109 is supported at each end by a bracket 129 in any suitable manner from the table and to each bracket is adjustably bolted a supporting element 130 for the track ends which are notched therein to receive and align with the elements forming a removable track unit 131, comprising spaced track bars held assembled by U-clips 87. I attach to the element 130 carrying the end of track 109 a spring-pressed dummy stop 132 which projects under the track bars in position to engage the dummies and bring them to rest. By manually springing this stop outwardly the dummies can be released to pass into the removable track 131 for the purposes later described.

The storage yard track 108 (Fig. 19) rises to a level above the table and forks to form the dummy storage track 133 (Fig. 21) which forks to form track 134. An endless dummy feed belt 135 is arranged under the tracks 108, 133 and 134 and its upper flight travels always in the direction of the arrow or toward the main dummy yard. This belt flight travels over a plate 136 suitably supported from the table and the belt is driven by any suitable drive mechanism from a motor 138 (Fig. 18). This motor is controlled by a switch 139 and is not reversible. These tracks 108, 133 and 134 at their right hand ends are connected by a ladder track under control of switch mechanism already described in connection with the corresponding portion of the main dummy yard. These tracks 133 and 134 merge again into the track 108 carried by the bracket member 65a, corresponding to 65, and terminate in this member in position to receive one end of the removable track 131 when transferred to the upper level. A support for the right hand end of the removable track 131 is provided at 129a and 130a (Fig. 20), corresponding to 129 and 130, these elements being likewise supported by brackets from the table.

Only one switch assembly 149, which will be later described, is needed for the control of the three tracks 108, 133 and 134.

The preferred form of dummy will now be described, particularly by reference to Figs. 4, 5, 6 and 7. The dummy is intended to be designed as a light inexpensive unit which will be as small as practicable to receive and hold car handling cards. As manufactured, the dummy comprises an oblong base 140 slotted to receive a thin metal plate 141 which is anchored in the base and provided with a top member 142 which is folded around the upper edge of plate 141 so as to form a socket to receive a car handling card 143. An ear 144 is formed on lower edge of member 142 in position to be engaged by a track to lift the dummy with the track.

I show three dummies typical of the three different standards provided in the dummy yard. The dummy which has been shown and described has one or more slots in its shank 141. In Fig. 4 is shown what I term the standard dummy in that it is used to represent four control wheel units. The slot 145 in this dummy is continuous but stops short of the base so as to leave a bottom switch trip plate 148 formed by a web arranged at the bottom of this slot. In the special dummy shown in Fig. 5 the slots 146 are arranged above and below the web 148a which is thus raised to intermediate position. In the dummy shown in Figs. 6 and 7 the slot 147 rises from the base and places the web 148b above it in the highest position. These webs form trip plate control panels to coact with the dummy checking mechanism will now be described.

The dummy checking mechanisms are all alike and will be described by reference to one carried by the bracket 65 in Fig. 3, it being understood that the reference numerals applied to these parts will serve for the duplicate checking mechanisms throughout. A spring assembly 149 is attached to the track member 101 adjacent to the plate 99 and it carries three pairs of insulated spring contacts 150, 150a and 150b arranged one above the other (Fig. 8) with the inner contact member of each pair carrying a pin 151 which projects toward the dummy track and stands in position to clear the track. The spring units of each pair are normally out of contact leaving their respective switch circuits open and these pins are selec-

tively actuated by engagement with the web 148, 148a or 148b of a passing dummy when the latter is brought to rest opposite the pins and is shifted laterally toward them by the dummy pusher 152. Dummies are guided past the pins 151 by a spring mounted plate 153 having holes therein registering with the spring pins so that when this plate is pushed toward the pins the latter will be free to project through it and to feel the dummy so as to be engaged by a dummy web 148, 148a or 148b.

The dummy pusher to shift its slotted shank laterally so as to selectively operate the desired switch pin, comprises a channel-shaped arm 152 (Fig. 16) pivoted on a pin 154 mounted across a U-shaped bracket 155 which has a vertically extending arm 156 slotted and connected by bolts or screws 157 to the bracket 128 or the equivalent element on the other brackets. The slots in the bracket arm allow vertical adjustment of the feeler which at its upper end is pivotally connected by a rocker arm 158 to the armature of its control magnet 158a.

This pusher on its upper end carries a switch operating arm 159 which is adapted to engage and close a spring switch 160 when the pusher has moved far enough to completely cross the dummy track slot so that, if for any reason a dummy should not be properly placed for selectively actuating the switch pins, it would prevent the closing of this switch 160 and thus no false signal would go out. The U-pusher has the same width as the dummy shank 141 and its recessed portion being faced toward the pins it will allow those pins to pass completely through the dummy slots which are not engaged by a dummy web while allowing an ample actuating movement for the pin that is engaged by the dummy web.

Associated with the pusher and mounted on the same pivot 154 is a pair of dummy stop arms 161 and 162 which are duplicates and reversely mounted on the pin 154 so that their bottom inturned pointed shanks will swing below the dummy track into position and engage the dummy base 140. Each pair of stops are spaced approximately to straddle the dummy base considered lengthwise of the dummy track and are approximately half the width of the dummy base considered transversely of the dummy track. The upper ends of both of these stop arms are connected by means of a common pin 163 to an actuator arm 164. The arms 158 and 164 carry stop pins which coact with the bracket 156 to limit the rocking movement of the elements they respectively control. In the position of the arm shown the left hand stop pins are in engagement with the bracket and the right hand stop pins are spaced to allow a limited rocking motion required for the elements to function. In order to prevent the possibility of a dummy shank catching on the channel shaped pusher while approaching it, the pusher has its channel flanges cut away above the level of the spring pins and one flange portion 165 is bent over to cross the channel and form a guide for the dummy. The dummy stops are so positioned at all times that one or the other of each pair projects approximately to the center of the dummy track where it will stop an approaching dummy. By moving the arms back and forth they will act with an escapement feed to permit the dummies to move past them one at a time.

The elements forming the tracks 112, 113 and 114 (Fig. 3) have been referred to as removable tracks. Each of the tracks heretofore described is formed by a pair of track bars 70 held in spaced relationship by U-clips 87. These track elements are capable of being lifted up out of their supporting sockets at each end, such sockets or seats being illustrated in Figs. 3 and 29 for one end of the dummy track section. They can be lifted out manually or they can be raised by electromagnetic means comprising, for the track 112, a vertically movable rocker arm 166; for the track 113 a rocker arm 167; and for the track 114 a rocker arm 168, (Figs. 28 and 29). These rocker arms are alike and each extends over into alignment with the center of its respective track and then it is bent laterally at 169 and extends into the adjacent U-clip 87 of its respective track element, so that when each is raised it will engage its respective clip and lift the track it controls a predetermined distance. It is desirable that each of these arms entering a clip shall carry on top thereof a normally open switch comprising a pair of contact arms 170 insulated and with the upper arm disposed to engage the track clip 87 and be brought thereby into engagement with the lower spring contact member when the track element is lifted. The top plate 71 from which the tracks 112 and 113 are supported carries a spring switch element 175 disposed over each track, see Figs. 26 and 27. The upper spring of such switch element is adapted to engage under a pin 176 carried by the upper end of a bar 177.

The bar 177 for the track 112 is received in a notch in the plate 68 (Fig. 3) and is adjacent to the clip 87 of the assembled track section. The bar is mounted for a limited vertical play on the plate 68 by means of a shoulder screw 178 (Fig. 27) passing through a vertically elongated slot 179 in the bar 177. At its lower end the bar lies against the adjacent track member 70 and at its lower end it has a lateral pin 180 which is normally received in a notch 181 provided in the bottom edge of the adjacent track bar 70 so as to seat flush therein. On the top each bar 177 carries a finger plate 182. It is normally pressed upward by the action of the upper spring switch element engaging its respective pin 176 and thus its stop finger 180 is held up in retracted position clearing the dummies. By depressing the finger piece 182 the bar will move downwardly, closing its respective switch element 175 and placing its stop arm 180 in the path of the dummy bases so as to stop them.

The dummy checking mechanism to which the dummies are delivered from track 131 (Fig. 20) for distribution to tracks 108, 133 and 134 is mounted upon a bracket 65a in the manner described and shown in Fig. 16. Bracket 65a is carried by a plate 201 attached to the side of the table, not shown, and this bracket 65a carries a magnet 158a for actuating the operating arm 158 for the pusher and another magnet 164a for the operating arm 164 for actuating the dummy stop arms 161, 162. The circuits controlled by the dummies in this case serve to control the energization of switch actuating magnets carried by the brackets 202 and 203 likewise attached to the plate 201 and connected to elements for the support of the track, such as have already been described. The switch units also are like those already described, and the operation of parts is such that standard dummies, such as appear in Fig. 4, will set the switch adjacent to the feeler so as to be directed into the storage track 108. The dummies, such as shown in Fig. 5, will be directed by the action of the switches into the track 133, and the other dummies, such as shown in Fig. 6, will be diverted

by the switches into track 134. By this means the dummies are selectively distributed into the tracks of the dummy storage yard, assembling all dummies that are alike on their respective track.

In each track near the delivery therefrom into track 108 I provide a simple escapement stop mechanism, such as has already been described, comprising the elements 161 and 162 and for each such mechanism I provide the actuating arm 164. As each escapement stop mechanism is actuated it releases one dummy and the belt traveling always to the left will carry the dummy into the downwardly sloping portion 108a (Fig. 19) of the track 108 which is sufficiently inclined to cause the dummies after leaving the belt 135 to slide down and engage the main belt 56 at the lower level.

The magnets for actuating the escapement feed arms last described are mounted upon brackets 204 and 205, Fig. 21, the brackets carrying magnets 206 for the arms 164 and each magnet being included in its respective separate circuit 207, 208 or 209, in each of which is provided a manually controllable switch 48, 47 or 49, each circuit being suitably connected with a source of power so that when an observer at the entrance to the main yard desires to release a dummy corresponding to the wheel control units of a passing vehicle, he actuates the appropriate switch 48, 47 or 49, or a combination of them, so that either a single dummy or a group of dummies, will produce the equivalent to the wheel unit capacity of the passing vehicle, and when thus released the dummies are carried forward by belt 135 and delivered to the main belt 56 which moves them up to the dummy track switch 80 (see Fig. 18) on bracket 66. This switch is operated by its respective magnet 213 under control of a circuit 214 having therein a switch 139 (Fig. 20) likewise controlled by the observer.

The switch stands normally in reverse position from that shown in Fig. 18, so that dummies will be free to pass from track 111 into the lower dummy storage track 109, but by operating hand switch 139 the observer can set the track switch so that dummies will pass from track 108 into track 111 and thence return into the control of the main dummy yard mechanism, being thereafter responsive in their movements to the movements of their respective control vehicles in the main switch yard. The main control belt 56 extends to the remote support 130 for the removable storage track section 131.

In Fig. 22 I show two rotary switch elements designated A and B, each being in the form of a disk mounted upon its respective shaft 216, which shafts are supported in bearings 217 mounted upon a bracket 218, which in turn is mounted upon a suitable support not shown. The bracket 218 is of inverted U-shape, its side legs being outturned at 220 and then downturned at 221 on each side and it carries on each side two magnets attached to each of its portions 220 and each magnet adapted to control its respective armature, which in turn actuates a feed pawl for advancing one of the ratchet wheels. Inasmuch as the mechanism for actuating the rotary switch element A is a duplicate of that for the element B, only one need be described, the letters "*a*" and "*b*" being suffixed to the numerals to designate the elements that respectively control the switches A and B.

The bracket for the switch A carries four magnets A1, A2, A3 and A4, the magnet A1 having an armature 222 pivoted to the bracket and movable between stops 223, adjustable on a stop pin 224 fast in the bracket, so as to move the spring pawl 225 on its upper end a sufficient distance to advance the ratchet 226 one step, a spring pawl 227 acting to prevent reverse motion of this ratchet wheel and to restrain it to a step by step advance movement. The opposite magnet A4 controls armature 222*a* which by means of similar stops is permitted to have a motion by which its spring pawl 225 will move the ratchet wheel 226 four steps. The magnets A2 and A3 control armatures 222*b* and 222*c* respectively. The armature 222*b* has its movement limited to advance the ratchet 226*a*, which is rigid with the ratchet 226, two steps, while the armature 222*c*, actuated by the magnet A3, will advance the ratchet 226*a* three steps. It thus follows that armatures A1, A2, A3 and A4 as energized will respectively advance the rotary switch A one, two, three or four steps. Coil springs 228 serve to retract the several armatures and the armature 222 acts when energized to open a spring contact switch element 229, this switch being opened after the pawl has been fully retracted for its working stroke. The corresponding magnets for the switch element B are respectively numbered B1, B2, B3 and B4 and they are associated with similar mechanism to that described so that B1 will advance the switch element B one step, B2 when energized will advance it two steps, B3 will advance it three steps, and B4 will advance it four steps.

The rotary switch element A is made up of three elements. The shaft 216 has a flange 231 keyed thereto and adapted to be connected through a sheet of insulation to a disk 233, this disk having a raised peripheral contact surface 234 subtending an arc slightly less than 180° of its periphery. A ring of insulation 235 is held against the face of the disk 233 by means of screws having their heads countersunk. A metallic contact ring 237 is attached to the insulation disk 235 by screws having their heads countersunk in the insulation so as to be free of contact with the disk 233. The ring 237 has a raised peripheral contact surface 234*a*, complemental to 234, and the space left between the adjacent ends of these surfaces is occupied by a boss of insulation carried on each side of the insulation ring 235. The insulation bosses thus serve to ride a spring contact arm 238 from 234*a* to 234 and vice versa. The spring contact 238 is carried by the rotary switch element B which is in continuous contact with a spring contact 239 attached to and insulated from the right hand bracket 218 on which the element B is mounted. For the element A I provide two spring contact members 240 and 241, both attached by suitable insulation to a bearing bracket 217 which supports the element A. The contact 240 engages the ring 237 and the contact 241 engages the disk 233 at a point inside the ring 237. From this arrangement it follows that current passing from 239 through element B and contact arm 238 will flow either through 233 or 237 when the arm 238 is not resting on insulation.

As shown in Fig. 23, the contact arm 238 stands in what may be regarded as neutral position, i. e., on an insulation boss. The boss is sufficient in extent so that the movement of either disk A or B one step will not be sufficient to cause the contact arm to pass off of the insulation, but if either element A or B is advanced two steps relatively to the other the contact arm 238 will move off of

the insulation boss and into engagement with either 233 or 237.

In Figs. 24 and 25 I show in detail the master control for the various circuits controlling the main and storage dummy yards. This comprises a motor 250 mounted on a suitable base 251 and adapted to drive through a suitable gear reduction box 252, a drum 253 having an insulated periphery in which are placed a plurality of groups of circuit closing plates seated flush with the periphery of the drum. The drum will be driven at a predetermined relatively slow constant speed which will allow the relays and magnets controlled by the contact plates to function in the manner required. The drum is mounted in suitable bearings 254 and I provide, in wiping contact with its periphery, eleven pairs of contact fingers, all mounted upon an insulation strip 255, on the base 251, and each pair of fingers constituting a switch adapted to be closed by its respective contact plate or plates when brought into engagement therewith by the rotation of the drum.

The right hand eight switches controlling the main dummy yard will be first described. The first switch on the right, designated L, is adapted to be closed by a single contact plate L1 which subtends slightly less than an arc of 180° on the drum. When switch L is closed the main belt driving motor 59 is driven to the left. Switch R is disposed to be closed by a plate R1 occupying a similar but opposite segment on the drum from plate L1 and laterally displaced therefrom so as to engage only the switch R. When switch R is closed the main belt driving motor 59 is driven to the right. Next on the left are two groups of contact plates, the plates P1 in the group being equi-distantly spaced and arranged opposite the plate L1 with an initial plate in the series placed to be engaged by its contacts P a predetermined interval after plate L1 has been engaged by its respective contacts. The other groups of contacts P2 are similarly placed in respect to plate R1. These contacts P1 and P2 serve to close the switch P which controls magnets 158a and the operation of the dummy pusher 152. Next on the left are two groups of contacts, the upper group comprising equi-distantly spaced plates S1, each plate being set with its forward edge slightly behind the forward edge of the corresponding adjacent plate P1. Each plate S1 extends behind its corresponding plate P1 so as to hold its respective switch circuit closed after its corresponding plate P1 has opened its respective switch. The other group of contact plates S2 are arranged opposite the contacts P2 with their forward edges substantially in advance of their corresponding contacts P2 and their rear edges terminating short of the rear end of the corresponding plate P2. This permits the contacts S2 to close their switches in advance of the contact P2 and to release them before the contacts P2 open their switches. These contacts act through the switch S to control the operation of the stop arms 161 and 162 for the dummies. Next on the left to the contacts S1 are two groups of contacts, the upper comprising the plates U1 disposed with their forward edges set to close their respective circuits before the corresponding plates P1 have opened their circuits and to hold these circuits closed until after the corresponding plates P1 have opened their switch. The contact plates U2 have a like relation to the contact plates P2, and these two groups control the switch U, the group U1 through circuit connections preventing the release of magnet A1 while any one of the associated magnets A2, A3 and A4 is being released and the contact U2 in like manner controls the release of the magnet B1. In other words, this group prevents any element of the rotary switch A, B from being simultaneously actuated by two of its control magnets. Near the left are two groups of contacts C1 and C2, the contact plates C1 of the upper group being so placed on the drum that their respective switch is open while either of the corresponding plates P1 and S1 is holding their respective switch closed. The same is true of the lower group C2 with respect to the contacts P2 and S2, and these contacts C1 and C2 control the switch C which, in cooperation with the circuit closing elements A and B, control a magnet for switches interposed in the circuits controlled by the switches A and B. Adjacent to the contact group last described on the right are two groups of contacts CH1 and CH2 formed by relatively wide plates, the CH1 plates being set with their forward edge slightly in advance of the rear edge of the adjacent plate C1 and their rear edge in line with the rear edge of the corresponding plate S1. In like manner each plate CH2 has the same relation to the plate C2 but its rear edge extends beyond S2 and even with the corresponding edge of the corresponding plate P2. These contacts control a switch CH, the purpose of which is to hold the signal which has been energized by the corresponding plate C1.

At the left I provide a single contact plate T1 which controls the switch T for the track lifting magnets. T1 is placed with its forward edge a predetermined distance to the rear of the forward edge of the plate R1 so as to allow ample time for the belt, after being reversed, to bring the dummies into a liftable section of the dummy tracks.

For the dummy storage yard to control the operation of its feeler, checker and switching mechanism so as to selectively distribute the dummies, I provide the left hand group of three switches on the master control drum, one group being designated PP1 and comprising as shown ten contact plates equi-distantly spaced and arranged to control the switch PP which in turn controls the pusher element 152 of the dummy storage yard checker. The next on the left is a series of ten contact plates SS1 with their forward edges set slightly behind the forward edge of the corresponding plates PP1 and with their rear edges falling approximately midway between the adjacent contacts PP1. These contacts control the switch SS which in turn controls the stop arms of the dummy checker mechanism and in part the operation of the dummy yard switches. At the left is a single contact plate CC1 which is set out of line with the contacts SS1 and PP1 and it is adapted to close a switch CC which energizes a magnet controlling a switch in the circuits controlled by SS1 and PP1.

The circuits for controlling the main dummy yard will now be described, reference being particularly had to Figs. 32, 33 and 34, wherein I have selected, for purpose of illustration, only the circuits that are controlled by the track instruments 25b, see Fig. 2, it being understood that a corresponding arrangement of circuits will be controlled by each pair of track instruments 25, 25a and 25c.

Associated with the circuits shown in Fig. 34 is the switch circuit controlled by the main track switch 21, this circuit being indicated at 22 leading to a single coil dummy switch controlled relay

magnet D, through a pair of contact make springs D1, and thence to the ground. The line 22, also by means of a branch 22a, leads through break springs ER2, EL2 controlled by magnets EL and ER to the relay D and thence to the ground. These break springs are designated EL2 and ER2 and are normally closed when their respective control magnets are de-energized, thus holding magnet D directly responsive to the main yard switch 21. When magnet D is energized, it closes make spring D2 which, by means of a circuit 22b will energize the magnet 116a (Fig. 3) which actuates the arm 86 to throw the left hand switch element to the position it occupies in Fig. 3 and thus will set the switch in the dummy yard to correspond with the switch operated by the track instrument 21 in the main yard.

I provide a circuit 22c leading from the source of current past make spring EL3 controlled by magnet EL to a make spring D3 controlled by magnet D and thence to the magnet. When EL is energized and D is energized current will be supplied through 22c to magnet D to hold it energized so long as EL is energized, regardless of whether the circuit 22 shall be opened by any other control means therefor. The circuit 22c may be similarly supplied with current by make spring ER3 controlled by the magnet ER and connected with a source of power. Thus when either EL or ER is energized D will be held energized after once being closed until both EL and ER are de-energized.

The next circuit to be described is that controlled by the track instruments, generally designated at 25b in Fig. 2. Alongside the track of this figure I show a pair of duplicate track instrument switches which comprise the elements 42 and 43, the elements for one switch being designated 42a and 43a to distinguish from the other switch of the pair, and, as shown in Fig. 33, the switch 43 closes a circuit leading over wire 43b to a single coil relay magnet F. In like manner from switch 43a a circuit 43c leads to the magnet G, each magnet having a suitable ground so that it will be energized when its circuit is closed by its respective switch element 43 or 43a. Assuming a car to be moving to the left over the track instrument at 25b, the circuit will first be closed to magnet F which will open break spring F1 and will close make springs F2 and F3. When F3 closes, current flows across break spring I1 to the magnet H, and thus relays F and H will be simultaneously energized.

When the switch 43a is closed by the advancing wheel the single coil magnet G will be energized before F is de-energized by the other wheel, on the same axle, clearing the track instrument which controls switch 43 and the magnet F. G being energized it will open break spring G1 and close the make springs G2 and G3. When G3 closes, current flows across the then closed make spring H2 over a circuit to switch 229 controlled by magnet B1 which is normally closed and thence flows over the circuit shown to the magnet H and provides a holding circuit for this magnet and continues to hold it energized, after magnet F is de-energized. After the wheel permits the switch 43 to open, F will become de-energized, closing F1 and opening F2 and F3. When F1 is closed, H and G being energized, current will flow across G2 and H3 and F1 to energize magnet B1, which will retract its respective armature 222 (Fig. 22) open its switch 229 and break the circuit to the magnet H, thus breaking the holding circuit to the latter, letting H1 close and H2, H3 and H4 open. When H1 closes, G being still energized, current flows across G3, H1 to the relay magnet I, energizing it and opening its break spring I1 and closing its make springs to I2, I3 and I4. As soon as H is de-energized by the opening of switch 229 of the magnet B1, switch H3 opens and de-energizes B1, permitting the pawl to advance B one step and again close its respective switch 229. At this time magnets F and H will be de-energized and G and I will be energized by the wheel holding the switch 43a closed and the circuits will therefore stand in the same relation as if a wheel driving from left to right had just closed this switch 43a. When the latter switch is opened by the wheel passing off of it the circuit to G is broken and the circuit to I across G3 and switch H1 is opened and the magnet I, being de-energized, this group of control relay magnets G, F, H and I will all stand de-energized, which is their normal position.

If control wheels on the main tracks approach so as to close switch 43a in advance of switch 43, the magnet G will be first energized opening G1 and closing G2 and G3, the latter passing current through H1 to the magnet I, closing I2, I3 and I4 and opening I1. When the wheel advances sufficiently to close 43 and energize F, F1 will be opened, F2 and F3 closed and current will then flow through F3, I2 through switch 229 controlled by magnet A1, returning to magnet I to hold it energized after G is de-energized. When G de-energizes, a circuit will be established through F2, I3, G1 to magnet A1 to energize that and interrupt its respective switch 229, releasing I which opens the circuit to A1 and lets its armature advance the rotary switch element A one step. When magnet I de-energizes, a circuit flows through F3, I1 to magnet H, energizing this magnet and opening H1 and closing H2, H3 and H4, which will leave the magnets in the same position as when first controlled by a wheel approaching from the right. As soon as switch 43 is released F is de-energized, breaking the circuit to H at F3, thus resetting the magnets to normal position.

It will thus be seen from this description of the circuits (Fig. 33) that as each control wheel unit passes from left to right, or from right to left across a pair of track instruments, the latter will be selectively energized responsive to the control wheel unit to advance B1 for a wheel movement to the left or A1 for a wheel movement to the right from initial position, see Fig. 2. This gives a directionally selective response on the magnets A1 and B1 for the passage of each control wheel unit, these magnets serving to advance their respective rotary switch element A or B one step in the same direction. As heretofore stated, one step is not sufficient to establish a circuit across A and B when in normal position with 238 resting centrally on an insulation boss 235. Thus, the passing of a single wheel unit over the track instrument will not energize the circuits that are controlled through the elements A, B, so as to advance a dummy past its checking mechanism.

It will further be evident that when a control wheel unit does not move entirely across one track instrument of a pair and onto the other instrument of the pair sufficiently to release the first instrument actuated, no actuation of either element A or B will result because it takes the simultaneous energization of both track instruments of a pair followed by the release of the first instrument actuated, to establish a movement of A or B.

Assuming now that the vehicle, or part thereof bearing the smallest number of wheel control units, namely, two, has passed to the right so as to advance the element A two steps by twice energizing its control magnet A1, a circuit will then be established by switch arm 238 from B to disk 233 and contact 241 which, as will be seen in Fig. 32, will energize the magnet ER. Had the movement of the control wheel been in reverse direction, the magnet B would have been twice energized and element B would have been advanced two steps and the circuit closed would have been passed through 237 and 240 to magnet EL. Thus, the magnets ER and EL are energized selectively, responsive to directional movement of wheel control units, and they will act to control a feed of dummies in the dummy yard by means of the circuits and in the manner which will now be described.

In Fig. 32 assuming the car movement is to the right and magnet ER is energized, its make spring ER4 is closed, thus establishing a circuit from single coil magnet J across ER4 and across switch K1 to switch CM1 which stands normally open subject to be closed by magnet CM in a circuit that is closed by the master switch C contacting the switch plates C1 or C2 on the drum (Fig. 24). The magnet K as shown is deenergized because it is in a circuit leading from the master switch L, which at the time is open because the movement being to the right the plate L1 will be out of engagement with the switch L. If, however, the movement of the wheel control unit had been to the left, then EL would have been energized, closing EL4 and passing the current to the upper contact with which K1 is adapted to engage. As soon as switch L is closed, the magnet K is energized and the circuit will then be continued through switch CM1 to a suitable source of power indicated. Bearing in mind that the switches R and L control the operation of the motor 59, it follows that when switch L is closed the dummies will be moving with the main belt to the left and when the switch R is closed the dummies will be moving with the main belt to the right.

Whenever switch C is closed switch CM1 is closed which completes a circuit through either of the circuits described the magnet J will be energized, closing the magnet switches J1, J2 and J3. J3 closes a holding circuit from J to switch CHM1 which is under control of CHM, which in turn is controlled by the closing of the switch CH. Therefore, as long as CH is closed J will be held energized. J1 closes the circuit to a switch PM1 under control of the magnet PM which in turn is controlled by the switch P. Thus, when J1 is closed, on the closing of master switch P, the magnet 158*a* controlling a pusher actuator arm 158 is energized to operate the pusher, rendering its operation directly responsive to the switch P and plates P2.

In like manner as long as switch J2 is closed a switch S through magnet SM and switch SM1 will control the magnet 164*a*, which will through arm 164 actuate the dummy stop and escapement elements 161 and 162 responsive to each closing of the switch S by any of its plates S1, S2, etc. A circuit controlled by switch U, magnet UM and switch UM1 forms a holding circuit, Fig. 33, leading to H4 and I4 which will act to hold either H or I energized according to whether H4 or I4 has been closed, and will hold it so energized as long as H is closed through any of the contact plates H1 or H2, etc. Inasmuch as I or H would be released by the opening of a switch 229 respectively by magnet A1 or B1, there would be an immediate actuation of one or the other of the switch elements A or B but for the holding of the circuits to I or H through switch U because, for instance, when the magnet I is held energized solely by the circuit through switch 229 controlled by magnet A1 it would be de-energized and a step advance made on switch element A when 229 opens the break to the magnet I, except for the fact that switch U will impose a holding circuit on this magnet I, as long as the switch is closed by its control plates H1, H2, etc. In like manner, the same switch U will, through similar switches, control magnet H and prevent de-energization of magnet B1 to advance the switch element B. The switch U is so controlled by the drum that it will prevent A or B from receiving an advance by means of the magnet A1 or B1 when any one of the other magnets A2, A3 and A4, or B2, B3 and B4 are to be released by the drum to advance A or B. I thus prevent either A or B from being simultaneously actuated by track instrument and dummy control circuits.

I will now describe the means by which a dummy movement is brought about past what may be termed a checking station 125, assuming that the wheel control units in control of a particular dummy are approaching the track instruments 25*b* moving to the right and that A and B stand in neutral position. As soon as two wheel control units have completed the circuits and the mechanism described will have advanced element A two steps, the last actuation will close the circuit to magnet ER (Fig. 32), whereupon its respective switches are operated to close ER4, and the drum controlled switches will take charge and effect a dummy movement to the right as follows:—Nothing will happen until switch R is closed by contact plate R1, whereupon motor 59 is started driving the main dummy feed belt 56 to the right.

Referring now to Figs. 1, 3 and 32, it will be seen that after an appreciable interval, which is ample to allow the belt, which is constantly driven while the equipment is in use, to reverse and to bring the dummies riding thereon into engagement with the stops of the checking mechanism 125*b*, plate C2 will close switch C, closing a circuit to K1 which will then be closed to the right circuit leading to switch ER4, which being then closed will pass the circuit on to J, energizing J and closing its respective switches. Before C2 opens switch C and de-energizes J, plate CH2 will close switch CH and hold J energized. After switch C is opened and while CH is closed, switch S will be closed by S2 which through J2 will energize magnet 164*a* (Fig. 3) and actuate the stop by retracting stop arm 162 and advancing stop arm 161 into dummy stopping position. The dummies resting upon the belt which is driven to the right will be immediately advanced to the right into engagement with stop 161, at which time it will be opposite the pusher arm and in position to properly engage the pins on the selector switches 150, 150*a* and 150*b*. When this has occurred and while CH and S are still closed, P will be closed by its contact plate P2, whereupon a circuit will be established through PM1, J1 to energize magnet 158*a* and actuate the pusher which will push the dummy against the yielding plate 153 and toward the spring contact arms 150, 150*a* and 150*b*. If we now assume that the railroad car carrying the two wheel control units that have brought about the operation of parts so far described is a standard railroad car having

four wheel control units, each unit as before stated comprising an axle and the two wheels thereon, the dummy being pushed will correspond to the standard dummy shown in Fig. 4, and will close the switch 150. In such event only switch 150 will be closed and, as will be seen in Fig. 32, this will close a circuit through M3 which will be closed in the manner later described through switch K4 to magnet B4, because K will then be de-energized, its circuit being opened at switch L. This will result, when the control circuit to B4 is broken, in a four step advance of the switch element B by the spring-pressed actuation of armature 222c. The circuit through P breaks after switch S opens. Shortly before switch P opens switch U is closed and is held closed long enough to allow B4 to complete its actuation of element B four steps. While switch P was closed, switch S opens, de-energizing magnet 164a so that the spring retracted armature will reverse the stops 161 and 162 to retract 161 and interpose 162 in the path of the next succeeding dummy tending to move to the right. This therefore removes any stop in front of the intended movement of the dummy being checked and as soon as P is released and the pusher is retracted, such dummy is returned to the track by the spring element 153 and is then free to travel along the track over the belt toward the dummy checking mechanism at 125c.

The magnet M, previously referred to, is energized by the closing of switch 160 responsive to the completion of the pusher arm's movement across the track. This switch, as seen in Figs. 16 and 32, will be closed by the arm 159 on the pusher. The purpose of this is to prevent any of the dummy selective switches 150, 150a or 150b becoming effective until the pusher movement across the track has been fully completed, and the importance of this is that it will prevent any registration on the element A or B unless the dummy is in correct position to selectively control the switch points and is capable of following the pusher for a full switch control movement. If the dummy is out of position the pusher will not complete its stroke, switch 160 will not close, and magnet M will not be energized and no set up made on A or B. This prevents any operation of the switch elements A and B except by a dummy in proper position to control them.

If, instead of being a standard dummy, the dummy should be of special type, it will then actuate switch 150a or 150b (Fig. 32) and through switches M1 or M2 will close a circuit to their respective magnet B3 or B2 when the operation is to the right and to A3 or A2 when the operation is to the left. This will result in an advance of rotary switch element A or B three steps or two steps. Hence, when switches P and S have been closed and opened in the manner described, a dummy will pass the checking mechanism, provided CH at the time is holding magnet J energized, which energization of the magnet J can only occur when ER is energized while one of the contacts C2 closes the switch C, or unless the magnet EL is energized at the time that the switch C is closed by one of the contacts C1, and it must be remembered that ER and EL are directly controlled by the movement of elements A and B which are responsive to the track instrument in the manner described. Thus the passing of wheel control units on the main track must command the magnet ER or EL and through them energize J before the control drum can close the switches S and P for a dummy movement in the desired direction. The arrangement of the corresponding contacts C1, CH1, S1 and P1 forming one group all lying in a zone controlling a dummy feed movement is such that all of the switches will be opened before the plate C1 of a second group will close switch C. I use a short plate C1 or C2 making it just long enough to enable magnet J to be energized and locked by the closing of switch CH, which action takes place while both switches S and P are open, and which will open switch C before either S or P is closed. The reason for this is that whenever C is open, the energization of ER or EL will be effective to energize J while S or P is closed. In other words, for the closing of a circuit to energize magnet 158a the switches must await a new cycle inaugurated by a closing of the switch.

It will have been noted that a second step advance of rotary switch A, in connection with the proper position of parts on the drum, caused a feed of a complete four control unit dummy past the checking mechanism and in passing it will have been noted that this dummy selectively advanced the rotary element B four steps in the same direction that the element A had advanced but two steps. This brings the element B two steps in advance of the element A. If the car bearing four wheel units continues across the track instruments to the right it will energize the magnet A1 twice and again advance the switch element A two steps restoring it to neutral position relative to B. If, instead of the car continuing entirely across the track instruments it is reversed and pulled back, the two wheel units that passed over and actuated the track elements will be moved from the right back over and set up two more steps on B. This will leave B four steps ahead of A and at the same time it will leave the circuit set so that on a reversal of the belt the dummy will pass back through the checker in a reverse direction and in so passing it will again be pushed and will at this time advance the element A four steps, bringing it back to neutral position relative to B.

It is further true that should the car stand with its wheel elements on opposite sides of the track elements 25, there being two control elements on each side, the element B will be two steps in advance of A and on the next reversal of the belt to the left, even if the railroad car stands motionless, the circuits will be closed to again feed the dummy that was passed to the right back again to the left of the checking mechanism and this movement will advance A two steps ahead of B and thus the dummy will shuttle back and forth so long as a car stands astride of a pair of track instruments. Should only one wheel control unit of a railroad car pass over and actuate the track instruments the element A or B would advance but one step from neutral position and there would be no dummy feed and when the wheel is moved back across the track element it will reset the elements A and B in neutral position. It will be observed that the feed of dummies to the right can only occur during that part of the cycle of the drum during which the switch R is closed and thus there will be an interval during which dummies cannot be fed to the right regardless of the movement of their control railroad cars to the right, and of course the same holds true for car movements to the left. This action will result in what I term an accumulation of wheel counts upon either element A or B, according to the direction of movement of the railroad cars. The parts are de-

signed to feed dummies through much more rapidly than cars, in normal switching movements, will pass corresponding track instruments. Each drum cycle involves a travel of the belt to the left for half of the cycle and then the travel of the belt to the right approximately for the other half of the cycle and the contacts in each of these half sections of the drum are set so that a number of dummy feeding operations can occur, say five, as shown, while the belt is traveling to the right, these cycles occurring after a sufficient interval has been allowed for the belt to bring all dummies in the yard to the right hand checking mechanisms. These mechanisms then operate responsive to the control of railroad cars moving or that have moved to the right to feed dummies to the right and the dummy feeding movement is fast enough to keep up with the normal car movement notwithstanding that they feed to the right only approximately 25 per cent of the time. This is quite practicable because the dummies can be moved very much faster past their checkers than railroad cars will be moved in yards over track instruments at permissible speeds for switching.

It will be obvious that cars moving over the track instrument to the left, while the belt is on the right hand cycle, will have to set up or register dummy checking counts on switches A and B to prevent these movements of wheel counters being lost. Such storage or registration of wheel counts will be duly set up by the relative displacement of the element switch members A and B. When A is ahead of B there are stored counts to the right and in the succeeding right hand cycle the dummies will be liquidated so long as magnet ER is energized and the reverse is true during the left hand cycle so long as EL is energized.

In view of the fact that the dummies will be under constant motion back and forth in the dummy yard and by reason of their small size and the relatively small car record cards which they bear, it is often desirable to enable any desired one of the dummy yard tracks to be lifted so as to disengage its dummies from the belt and to present them free of movement in convenient position to be removed, detached or examined without interfering with the other dummies. To this end the various main dummy yard tracks 112, 113 and 114 are adapted to be lifted by their lifting magnets, which have been described, in the following manner. Fig. 32 shows diagrammatically one of the track lifting magnets 166*a* all of which are connected in a circuit leading to hand switch 175, which when closed closes the circuit to switch TM1 controlled by magnet TM, in turn controlled by switch T which coacts with the single contact plate T1 on the drum. It thus follows that having closed manual switch 175, no track will be lifted until switch T is closed by T1, whereupon both magnets 166*a* for track 112 will be simultaneously energized, this track will be lifted, and switch 170 will be closed (see Fig. 29). This switch 170 closes a holding circuit for these magnets 166*a* through ER1 and EL1 to a source of current. If either ER1 or EL1 is open, the holding circuit will be interrupted and any raised track will drop as soon as T1 passes T, and as T1 is a very short contact plate the track will go back down immediately whenever ER or EL in the circuits at both ends of the track happens to be open. It also follows that the holding circuit is at all times subject to the opening of any one of the controlled switches ER1 or EL1 and the moment any one of the switches opens, the track will immediately drop. The reason for this is that whenever there is occasion to feed a dummy into or out of a track, say track 112, at either end, one of the magnets ER or EL will be energized and thus the track will be immediately restored to position and allow the required dummy movement automatically.

Inasmuch as the manual operation of closing switch 175 will depress an element 177 at the right hand end of track 112 to interpose a stop in the path of the dummies, it is requisite that this switch shall close only after the dummies have passed the stop moving to the left. The stop is held until the track is raised, which occurs while the dummies are moving to the right and after they have moved into the removable part of the track the stop will prevent the dummies moving to the right off of the movable track. After the track has been raised the manual switch can be released and thereafter the track will be subject to automatic operation.

Assuming that a dummy train has been properly assembled in dummy yard track 111 ready to move out to the right in correspondence with a railway train moving out on main yard track 11, the dummies will move out past the switch 80 which is normally set reversely to the showing in Fig. 18 so as to pass the dummies into track 109, along which they move into position against stop 132. When this stop is manually released the dummies will be fed into track section 131 which is removable and is adapted to be lifted out when full of dummies and set in brackets 65*a* and 139*a* (Fig. 20) in position to restore the dummies to the dummy storage yard. When thus placed the dummies are in engagement with the upper belt 135 which when once started will travel always so that its upper dummy engaging flight will feed dummies to the left or toward the dummy storage yard. The switch 139 not only controls motor 138 for belt 135 and closes a circuit 214 to control the switch at the left hand end of track 109 (Fig. 18), but it delivers current to the normally open switch N1, controlled by a single coil magnet N (Fig. 20) in a circuit leading to the switch CCM1 controlled by the magnet CCM in turn controlled by the drum switch CC, which switch coacts with the contact CC1 on the main drum and when closed will energize N, and close switches N1, N2 and N3. The switch N1 will hold the magnet N energized, the switch N2 is in circuit with a switch SSM1 controlled by drum switch SS, and in like manner the switch N3 is in circuit with PPM1 controlled by magnet PPM, in turn controlled by drum switch PP. When magnet N is once energized to close switch N1 the push bottom switch 139 will hold magnet N energized. When switch SS is closed at the drum, current will flow across SSM1, N2 to normally open switch O1 and will also flow to normally open switch Q1. The two track switches 80 are selectively operated responsive to the wheel value of the control panel on the dummy standing opposite switch mechanism 149. One type of panel will energize magnet Q, another type magnet O, and the third type neither of said magnets. When magnet O is energized by the feeler action on a dummy closing switch 150*a*, switch O1 will be closed, serving as a holding circuit for magnet O, and O2 will also be closed to energize a magnet 213*a* and will move the right hand switch element (Fig. 20) controlling entrance to the dummy storage yard from the position shown in which it will divert the dummies into the ladder

track and the second switch 80, being normally in the position opposite from that shown, the dummies will be diverted into track 133. Thus, all dummies that will feel and actuate switch 150a will be diverted into track 133. If the dummy be of the type to feel and close switch 150b, the magnet Q will be energized, closing Q1, Q2 and Q3, Q1 providing a holding circuit and the other two delivering current to magnet 213a and 213b. This will cause the switch controlled by 213b to be shifted so that all dummies that selectively close switch 150b will be collected in track 134. The stop and feeler mechanism for controlling the passage of dummies into the dummy yard is such as has already been described and they are responsive to circuits controlled by switches SS and PP when magnet N is energized. The groups of contacts SS1 and PP1 will be substantially continuous about the drum except provision is made so that neither switch SS or PP can be closed while switch CC is closed. Switch CC having closed and the magnet N being locked, the successive closing of the switches SS and PP will in proper relationship operate the stops and the feelers so as to feed the dummies into the dummy storage yard and the contact plates SS1 are long enough to provide the necessary time interval for the dummies to get past their guiding switches.

The dummies, having been thus selectively grouped and assembled in the dummy yard, are discharged by a dummy stop mechanism in each track 108, 133 and 134 near its left hand end, see Fig. 21, which mechanisms are controlled manually by the switches 49, 47 and 48. These switches, as has been heretofore stated, represent a group of selective dummy feeding switches which are arranged at a station at each end of the main yard. The station at the right hand end of the main yard will control by these switches the return of dummies from the dummy storage yard at the right. In like manner the station provided at the left hand end of the main yard will, by similar switches, control the release of dummies from a similar dummy storage yard at the left hand end of the dummy yard, these storage yards and storage mechanisms being duplicates but only one need be described and the typical operation of that is as follows.

A train is approaching we will say from the right, because the yard illustrated is the right hand storage yard. In the customary practice this train pulls slowly into the yard and is stopped for inspection on a yard track. As the locomotive, tender, cars and caboose pass the observation station the clerk on duty there will make a record of all vehicles passing. This record may be made in various ways, that preferred being to dictate the car initial and number to a recording machine as the vehicle passes, thus establishing a record of the cars in their proper order that will identify them. As each car passes the clerk observes whether it is of standard wheel unit or of abnormal wheel unit type. If it be a standard wheel unit type having four wheel control units, he will for each such car depress the switch 49 once which will energize magnet 206 in track 108 and actuate the stop mechanism so as to permit belt 135 to feed to the left one standard dummy. If a two wheel caboose be in the train, he will depress switch 48, actuating magnet 206 which controls the stop in track 134 and a dummy representative of two wheel units will be released to pass down track 134 and assume proper position in track 108. If a vehicle with six wheel control units, such as a car with six wheel trucks, passes, he will press switch 49 and then 48 and two dummies will be fed from the tracks 108 and 134 which will together represent six wheel counters. In other words, by a combination of operations of these switches 49, 48 and 47 dummies representative of the wheel value of any vehicle can be provided and delivered into track 108. Having in this manner assembled in track 108 the appropriate dummies representative of the incoming train of cars, these dummies will pass down the inclined track 108a and pass the switch leading therefrom into track 111, whereupon they are engaged by the main belt 56 and are fed to the left under the control of the checking mechanism into the main dummy yard in the manner which has already been described.

The dummies reproduce the movement of the main train into the yard track in which it is initially received and there it is customary for the train to come to rest. It will be understood that from the remote station control the dummy train will thus have been set up on the dummy board in the yard master's office and customarily the conductor will bring there his car handling data for checking. At the same time from the record made by the clerk and reproduced in the yard master's office appropriate cards will be made out for this train of cars and they will be set up on the dummies assembled and can be checked by the conductor's records. The cards are then stuck into the dummy clips which represent the corresponding cars in the main yard and thereafter by the automatic control described these dummies will follow their control cars, moving always in the dummy yard into corresponding tracks to those occupied by their respective control cars in the main yard.

After being handled in the yard the trains are made up and the dummies reproduce the movement of the train and are delivered to the movable track sections 131 by which they can be conveniently transferred to the control of the mechanism for redistributing them in the dummy storage yard.

The operator in control of the dummy yard in the yard master's office can transfer these track sections 131 loaded with dummies to whichever storage yard is in need of them, thus making it simple and easy to maintain a proper supply of dummies in all of the storage yards regardless of an unbalanced flow of traffic. It is preferable but not necessary that the yard master's office be maintained at one of these observation stations.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:—

1. Improved method of indicating the position and identity of railway vehicles in switching yards, which consists in providing a dummy yard track arrangement corresponding to that of the main switch yard, sweeping dummies back and forth periodically over tracks of said dummy yard independently of any corresponding movement of the railway vehicles which they respectively represent, and controlling the distribution of dummies in their yard tracks responsive to and in correspondence with the distribution of their

corresponding control vehicles in the main switch yard tracks.

2. A method according to claim 1, in which the control of dummy distribution for any given direction of movement is coordinated with the sweeping movement of dummies in the same direction.

3. The improved method of indicating the position and indentity of railway vehicles in switching yards, which consists in providing a dummy switch yard having a track arrangement corresponding to that of the railway switch yard, providing in said dummy switch yard dummies representative of the separate vehicles admitted to the main yard, subjecting the dummies in the dummy yard to a back and forth motion not responsive to movement of their respective vehicles in the main yard, dividing the tracks in the main and dummy yards into similar sections and controlling the passage of dummies back and forth from track section to track section responsive to the corresponding movements of their respective railway vehicles from track section to track section back and forth in the main yard.

4. The method according to claim 3, in which the release of dummies to follow their respective railway vehicles from track section to track section is coordinated with the independent back and forth movement to which the dummies are subjected.

5. The method according to claim 3, in which the dummy movement responsive to their respective railway vehicles is subordinated to the back and forth movements of all dummies and is effective to pass a dummy in a given direction by a control point only while all dummies are being urged in that same direction.

6. A dummy switch yard track system, comprising means to direct throughout the system dummies which are representative of control elements, escapement means to pass the dummies one at a time past release points, and a common reversible drive means adapted to releasably engage and move the dummies periodically back and forth between release points throughout the system independently of a corresponding movement of their respective control elements.

7. A dummy system according to claim 6, in which the common drive means is a belt, and the escapement means is controlled responsive to the direction of movement of the belt and adapted to act only after the belt has had time to present thereto any dummies in its respective track.

8. A dummy switch yard track system, comprising classification tracks, means to check and direct dummies throughout said tracks according to the movement and positioning of railway cars on similar main tracks, a friction drive means to propel the dummies, and means to mount the tracks in sections for independent movement whereby each may be shifted to disengage dummies therein from said drive means.

9. In a dummy switch yard, the combination of a multiplicity of interconnected tracks, dummies representative of railway cars movable about said tracks, and means automatically controlled by the railway cars to permit movement of the dummies, the tracks being loosely seated and independently movable to disengage dummies thereon from the dummy moving means, in combination with means to automatically reseat a dummy track when the automatic control for the dummy switch yard requires the movement of dummies into or out of such track.

10. In an automatically operated dummy yard wherein dummies are provided each with a control panel representative of the wheel value of its respective individual railway car and means are provided to cause said dummies to move about the dummy yard responsive to movements of control cars about the railroad yard, a pair of rotary switches, counting and check off means operated by said rotary switches, means responsive to directional movement of control wheels and subordinate means responsive to the wheel value of individual dummies which act selectively to advance one or the other of said switches in the same direction step by step a predetermined distance.

11. In a dummy track system, reversible drive means for moving dummies back and forth over the dummy yard, a plurality of release mechanisms for stopping and passing dummies from both ends of each dummy yard track, and a master control switch adapted to intermittently reverse the dummy drive and to time the action of said release mechanisms with respect to the time of the reversal of said drive.

12. In a dummy track system, reversible drive means for moving dummies back and forth over the dummy yard, a plurality of escapement mechanisms for stopping and passing dummies from both ends of each dummy yard track, and a master control switch adapted to intermittently reverse the dummy drive and to time the action of its release mechanisms, said control means being designed to prevent the actuation of the release mechanisms until sufficient time has been allowed for the drive to present dummies on the tracks to the release mechanisms toward which the dummies are being moved.

13. The combination with a dummy yard and mechanism responsive to the movement of cars in a main yard to control the distribution and movement of dummies about the dummy yard, of a dummy storage yard comprising a track to receive differentiated dummies from the dummy yard, a plurality of storage classification tracks into which like dummies transferred from said receiving track are grouped, and manually controlled means to release from said classification tracks dummies of the desired character for delivery back in predetermined order into the main dummy yard.

14. A dummy yard and mechanism responsive to the movement of cars according to claim 13, in which a section of the receiving storage track is movable into cooperative relationship of the classification tracks of the storage yard, there being means acting to feed the dummies from said movable track toward the classification tracks, and automatic means responsive to the dummies to selectively group like dummies in the same classification track.

15. A dummy yard and mechanism responsive to the movement of cars according to claim 13, in which all of the dummies in the dummy classification tracks are adapted to be moved responsive to a common belt moving toward the dummy yard, an inclined section in track down which the dummies run by gravity after disengagement from said belt, and a main belt system operable to move the dummies about the dummy yard into engagement with which said dummies are brought by said incline.

16. In an automatically operated dummy yard, independently vertically movable classification

tracks, dummies movable about said tracks according to the movement and positioning of railway cars on similar main tracks, actuating means for the dummies when the tracks in which the dummies are disposed stand in lowered position, means to raise the tracks selectively to disengage the dummies from their actuating means, and means automatically responsive to the mechanism which controls the distribution of dummies to lower a track when it is proper for dummies to be moved into or out of same.

17. A dummy classification yard having a track arrangement corresponding to that of a main yard comprising a plurality of independently movable tracks, dummies distributed about the dummy yard in correspondence with the distribution of their respective railway control cars in such main yard, means to selectively raise the tracks, a belt drive means underlying the tracks, said dummies being adapted to enter the tracks and frictionally engage said drive means and to be lifted by a track out of engagement with said drive means, and means responsive to the automatic distribution of dummies about the dummy yard to lower a track when it is proper to deliver the dummies to or remove them from such track.

18. The method of indicating the position and identity of railway vehicles in a switching yard, which consists in providing a dummy switch yard having an arrangement of dummy track sections corresponding to predetermined sections of a main yard track, assembling in each dummy track section in corresponding order dummies representative of the vehicles in the corresponding main track section, causing the dummies to be shifted back and forth between junction points of the dummy track sections independently of corresponding movement of their respective control vehicles, causing the dummies to be stopped at said junctions and causing the dummies at a junction point to be passed thereby responsive to and in corresponding direction with the movement of their respective control vehicles past a corresponding point in the main yard.

19. In an apparatus for indicating the position and identity of railway vehicles in a switching yard, a dummy switch yard having an arrangement of dummy track sections corresponding to predetermined sections of a main yard track, dummies movable back and forth over the dummy tracks and adapted to be assembled in each dummy track section in corresponding order to their respective control vehicles in the main track sections, escapement means at the junction points between dummy track sections, a common means for moving the dummies by frictional engagement distributed over the dummy yard with a back and forth travel throughout the dummy track sections they respectively occupy without regard to movements of their respective control vehicles, a control means for said escapement means which is responsive to the moving of control vehicles past the intersection of the main yard track sections corresponding to dummy track sections, said control means being adapted to allow the passing of a dummy for each passing vehicle and in a corresponding direction, and a timing means for coordinating the response of the escapement means with the independent back and forth dummy movement, so that when an escapement means is caused to respond to a vehicle movement from one section to another of the main tracks, said common dummy moving means will be moving in a direction to present and will have presented the dummy to be released to the escapemnt means about to be energized to allow same to pass.

20. The combination with dummies each designed to represent a predetermined number of control wheels, of railway cars operating on a track system, a dummy track system similar to the track system, means to operate dummies thereover, and dummy stop and release means in the dummy track system comprising escapement stop means to bring the dummy to rest and to permit passage thereof thereby, and feeler means adapted to engage the arrested dummy, said feeler means being respectively responsive to the control wheel value of the dummy, and a rotary switch control counting means having differentially movable actuators selectively operable responsive respectively to the feeler means and the control wheels and adapted to control the escapement stop means.

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