Aug. 7, 1951 W. B. SCHMIDT 2,563,075

BRAKE SYSTEM FOR AMUSEMENT PARK RIDES

Filed Feb. 21, 1947 3 Sheets-Sheet 1

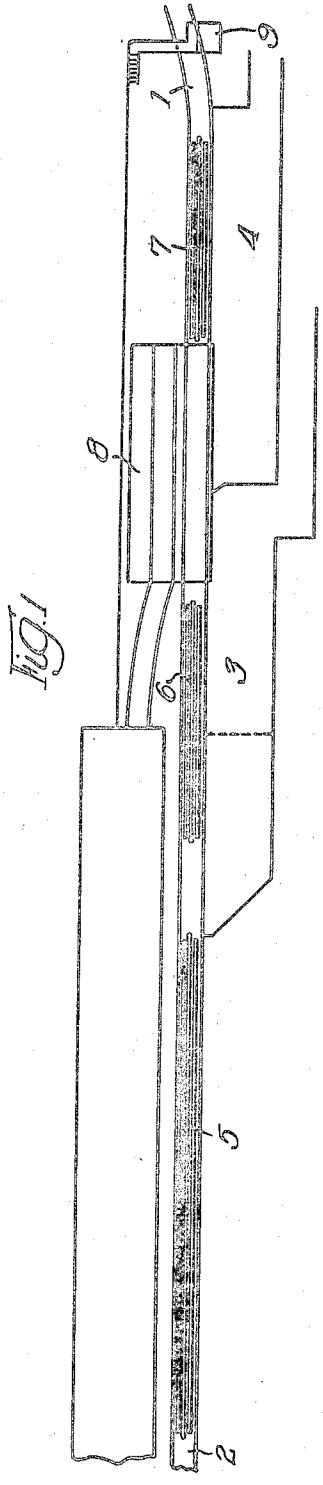

Fig. 1

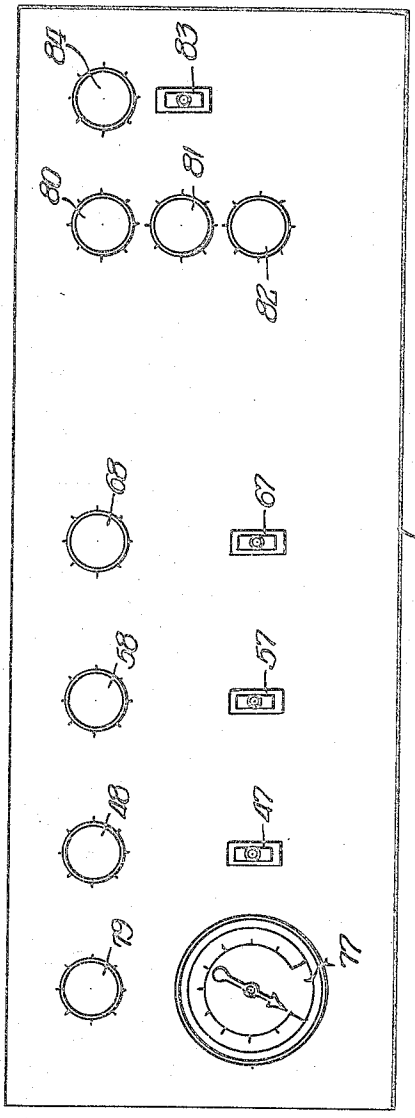

Fig. 2

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BRAKE SYSTEM FOR AMUSEMENT PARK RIDES

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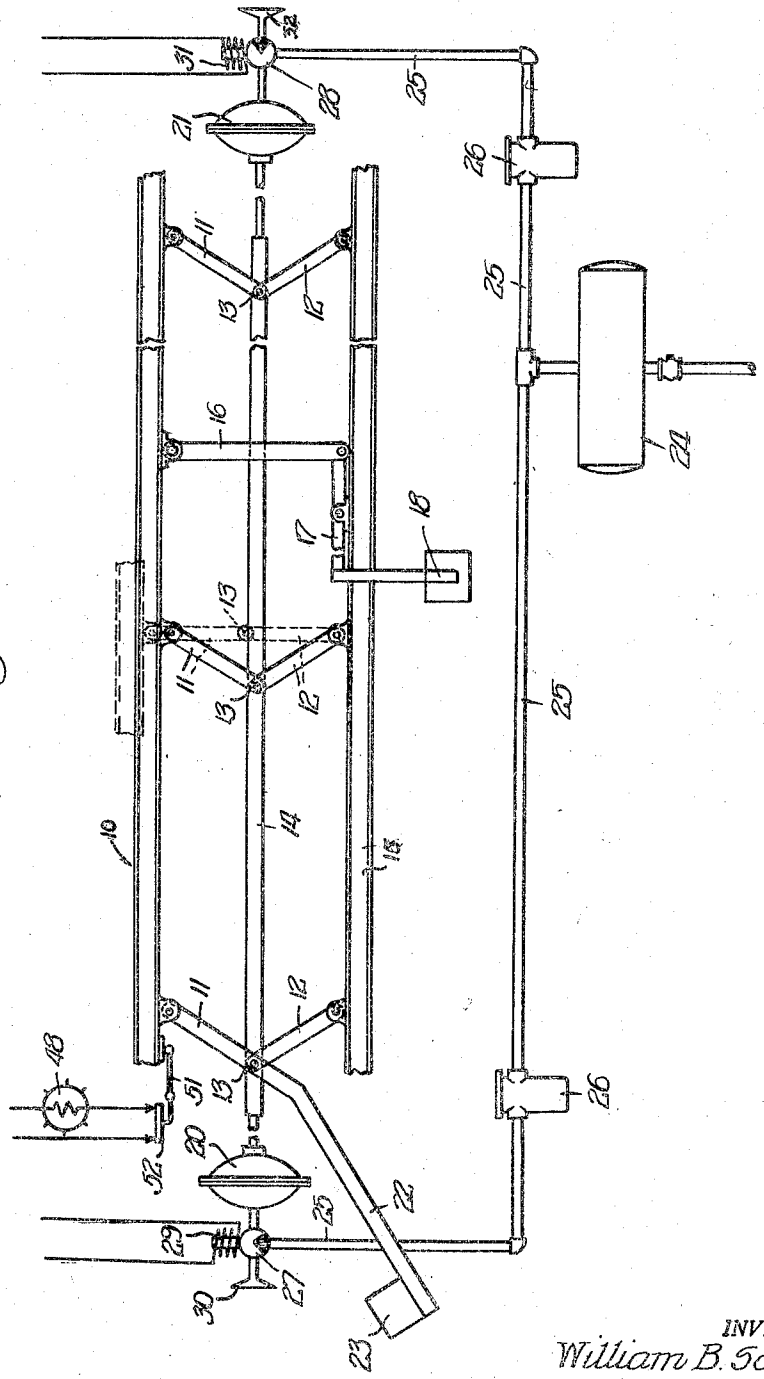

Fig. 3.

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BRAKE SYSTEM FOR AMUSEMENT PARK RIDES

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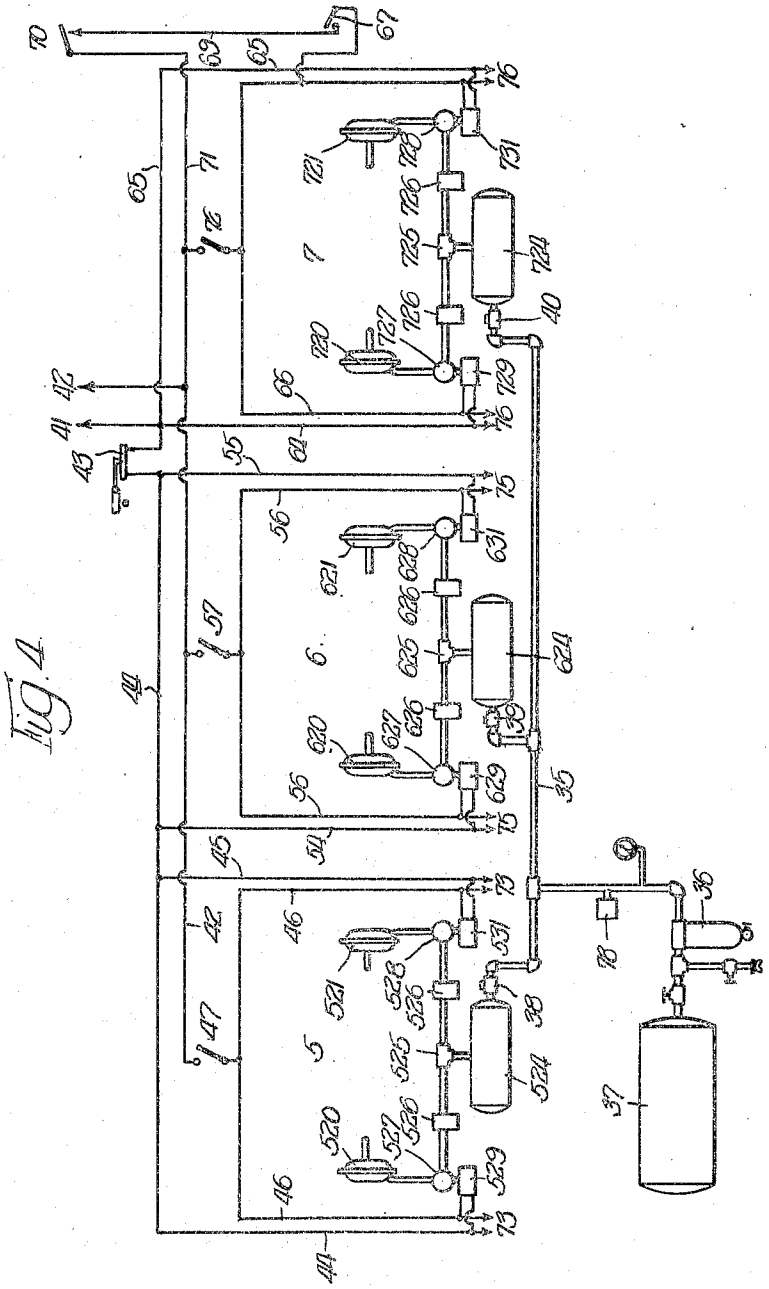

Fig. 4

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UNITED STATES PATENT OFFICE

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BRAKE SYSTEM FOR AMUSEMENT PARK RIDES

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4 Claims. (Cl. 188—62)

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This invention relates to safety brakes for an amusement park ride and has for its principal object the provision of a new and improved device of this kind.

It is a main object of the invention to provide in an amusement park ride a fluid pressure operated brake system that can be controlled from a central point by electromagnetic devices manually controlled by an operator.

Another object of the invention is to provide a brake system in which the brakes are normally set to stop a train and are moved to permit passing of a train only when the operator performs certain acts, thereby insuring safety by stopping the trains in the event of a failure, either human, mechanical or electrical.

Another object of the invention is to provide in an amusement park ride a brake system that is remote-controlled, so that the operator may be stationed above and to one end of the platform where he has an uninterrupted view thereof and is away from the people thereon so that his attention will not be distracted from his work.

Still another object of the invention is to provide in an amusement park ride, a brake system composed of standard parts that are readily available on the open market at low cost.

A still further object of the invention is to provide in an amusement park ride, a fluid pressure brake system that can be operated rapidly and positively with a minimum of power, thereby speeding up the ride with safety and at low cost.

Further objects of the invention not specifically mentioned here will be apparent from the detailed description and claims which follow, reference being had to the accompanying drawings in which a preferred embodiment of the invention is shown by way of example and in which:

Fig. 1 is a plan view of the platform section of an amusement park ride trackway showing the location of the braking mechanisms thereon;

Fig. 2 is a front elevational view of the control panel of the brake system;

Fig. 3 is an elevational view of a section of the brake mechanism shown in released position to permit a train to pass; and

Fig. 4 is a diagrammatic view illustrating the control means for the back, middle, and front brakes of the system.

Amusement park rides of the so-called roller coaster type usually consist of a trackway containing sharp curves and steep inclines. Trains consisting of from one to several cars are pulled to the top of the trackway structure, usually by a chain mechanism, and then released to travel

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over the remainder of the trackway as a free roller coaster.

Located at or near the bottom of the chain is a loading platform from which passengers enter the various cars of the train, and adjacent to this loading platform is an unloading platform upon which riders who have finished the ride disembark from the train.

In most instances the roller coaster trackway is long and two or more trains are operated on it simultaneously. Various arrangements are provided to insure proper spacing of the trains on the trackway, as for example, the interlocking control device shown in the Patent #2,310,039, issued February 2, 1943. Such devices control the train from the time it leaves the loading platform until it enters the approach to the unloading platform.

Prior art rides of which I am aware have usually had what is known as a back brake located in the approach to the unloading platform. Frequently the back brake has consisted of a set brake and a controlled brake, the train speed being checked somewhat by the set brake and then further reduced by the controlled brake which has been adjusted by the platform attendant. An intermediate brake has been located in the unloading zone and manually operated by the platform attendant to control the movement of trains through that zone and onto a front brake located in the loading zone. The front brake has also been manually controlled.

These prior art systems are perfectly safe when properly operated, but since they are manually controlled throughout by the platform attendant, any failure to act or any tardiness in acting on the part of the attendant may result in an unsafe condition. The present invention eliminates this hazard, as will presently appear.

In accordance with the teachings of the present invention, the back brake, intermediate brake, and front brake are all normally set to stop a train. Controls for these brake mechanisms are taken off of the platforms and extended to a control booth, preferably located above and near the outgoing end of the platform, where an operator in the booth will have a clear view of both platforms and the approach to the unloading platform. Since the operator is thus removed from the platform and its distractions, he will be less likely to have his attention distracted from the work at hand. Located in the control booth are simple controllers which must be operated by the operator to release the brakes so as to permit passage of a train over the brake. If the operator

fails to operate this controller, the train will be stopped by the brake and retained in the zone controlled thereby until the operator moves the controller to release the brake and permit the train to proceed. Thus human failure brings the trains to rest in a safe position and does not result in a hazardous condition as heretofore.

By combining the braking system of the instant invention with the interlocking control system of the Patent #2,310,039, control of the trains on the trackway is positive and the likelihood of an oncoming train ramming into a standing train is eliminated. Should the single operator who is controlling the entire ride permit his attention to be distracted, a train approaching the unloading zone will be stopped on the normally set back brake, and a succeeding train will be stopped by the interlocking block system of the prior patent before it can move into an unsafe position.

Brake systems employed to stop roller coaster trains usually consist of trackway brake shoes mounted between the rails and adapted to be elevated so that they will be engaged by brake shoes on the train to bring the train to rest. In certain instances the brake shoes are moved laterally to engage vertically disposed brake shoes on the train, thereby to bring the train to rest. In either case, notwithstanding counterbalances, considerable force is required to move the brake mechanism into set position in which it will engage and stop a train. Mechanical means for so setting a brake can be extended to the central control point; however, a much more rapid control of the brake can be accomplished through the use of fluid pressure, either pneumatic or hydraulic, located at the brake itself.

All the pressure lines in a fluid pressure system should be maintained as short as possible to minimize the chances for leakage, and to permit speedy operations with a minimum volume of fluid, and to this end, valves for controlling the fluid pressure brake operating devices are located near the brakes and preferably are electromagnetically controlled so that it is only necessary to extend to the central control booth suitable electrical connections to these electromagnetic valves. The controllers in the booth are electric switches capable of being quickly manipulated and capable of being manipulated in only one way. While electromagnetic valves are preferred and are readily available on the open market, other remotely controlled valves actuated by fluid pressure or mechanically may be substituted if desired. Also located in the control booth and in juxtaposition to the controllers are suitable signal lights or other indicators through which the operator is given an indication of the position of each brake on the ride, and such other data as needed for the safe control thereof.

Referring now to the drawings in more detail, in Fig. 1 there is shown the platform section of a roller coaster from which section the trackway 1 leads to the right and onto the chain (not shown) by which trains are elevated to the high point of the ride and run free to the approach 2 leading to the platform section. The platforms are two in number, platform 3 being an unloading platform onto which riders disembark at the end of their ride, and platform 4 being a loading platform from which riders enter the trains.

In the approach section 2 of the trackway is a brake 5, hereinafter referred to as the back brake, which is long enough to stop any train on the brake and before the train reaches the unloading platform. This brake 5 is normally set to stop a train and is located at the outgoing end of the last block in the interlocking system of Patent #2,310,039 when the trackway is equipped with such a system. In the event that a train is stopped on the brake 5, as may happen in the case of an unusual operation, a succeeding train on the trackway will be stopped at the entrance to this last block in the manner more fully explained in said patent. Normally, however, the operator will release brake 5 on the approach of a train, as will presently appear.

Located at the unloading section 3 of the platform is an intermediate brake 6, likewise normally set to stop a train. While somewhat shorter than the back brake 5, brake 6 is nevertheless long enough to stop a fully loaded train when that train is traveling at its normal speed of approach to the unloading platform. Located adjacent the loading platform 4 is a front brake 7 which is shorter than brake 6 and is used to control trains at the loading platform, as will presently appear.

Located between the intermediate and front brakes 6 and 7 is a transfer table 8 by means of which trains are added to and removed from the trackway, unused trains being placed on a storage track to which the transfer table leads.

Located beyond the right-hand end of the loading platform, Fig. 1, and above the trackway 1, is a control tower 9 wherein the operator of the ride is located. In this tower, the operator has clear, unobstructed view of both platforms, the approach trackway 2 at the back brake and beyond, and also can see the trackway leading to the chain. Furthermore, the operator is removed from the platform and its distractions are therefore removed from him, so that he is more apt to give his undivided attention to his work. Located in front of the operator is the control panel shown in Fig. 2, the details of which will be hereinafter explained.

The particular construction of the brakes will, of course, vary with the individual rides to which the system of the present invention is applied, and in Fig. 3 a typical brake is shown by way of example. This brake consists of a shoe 10 supported by a plurality of sets of levers 11 and 12 that are pivoted together at 13 and connected through this pivot to a thrust rod 14. The levers 12 are pivotally connected to a supporting base member 15, as shown.

Also connected to the brake is a suitable counterbalance mechanism which, in the example shown, consists of a rod 16 pivoted to the brake, and also to a pivoted lever 17 mounted upon the base 15, which lever 17 carries a counterweight 18 that is sufficiently heavy to be effective through the lever system to counterbalance completely the weight of the brake and its mounting levers. If desired, the counterweight may slightly overbalance the brake.

Connected to the thrust rod 14 are brake actuators 20 and 21, actuator 20, when energized, moving the thrust rod 14 to the right, Fig. 3, to elevate the brake 10 into position to stop a train, and actuator 21, when energized, moving the thrust rod 14 to the left into the position in which it is shown in solid lines in Fig. 3 to release the brake. Actuators 20 and 21 may be any suitable fluid pressure responsive devices, a number of which are readily available upon the open market. Preferably, however, these devices are diaphragm type, pneumatic actuators

such as are commonly employed to actuate brakes on trucks and trailers, this particular type of actuator having been found to be very economical in its use of fluid pressure, very rapid in its operation, and easy to maintain in proper working condition.

It will be noted that when the actuator 20 is energized and thrust rod 14 moved to the right, Fig. 3, the pivots 13 between the links 11 and 12 move slightly past center, that is, past a line drawn between the center of the pivot by which the link 11 is connected to the brake 10 and the center of the pivot by which the link 12 is connected to the base 15. In a braking system wherein links 11 and 12, when aligned as shown in dotted lines in Fig. 3, elevate brakeshoe 10, engagement of that shoe 10 by the brakeshoes on the cars of the train may actually raise the train so that it is supported by the brakeshoes rather than by the wheels. Such an arrangement is common in the art, and Fig. 3, being an elevational view, shows a brake of this type and the main weight of the train on the brake is carried by the links 11 and 12, the actuator 20 merely holding the links in alignment.

Also connected to one of the links 11 by a suitable arm 22 is a mechanical reset weight 23 which is sufficiently heavy to move the brake from a released to a set position, so that in the event of a complete pressure failure, with the brake in released position, the mechanical reset will move the brake to its set position.

The brake 10, its counterbalance and supporting levers shown in Fig. 3, is in reality merely a section of a brake; and a long brake, such as the back brake 5, will consist of as many sections as may be required, connected together by suitable means so as to operate as a single unit.

Fluid pressure for operating the actuators 20 and 21 is stored in a suitable reservoir 24 that is connected by piping 25 through suitable filters 26 to control valve 27 associated with the actuator 20 and control valve 28 associated with the actuator 21.

The control valves 27 and 28 are preferably electromagnetically operated fluid pressure control valves, several types of which are readily available upon the open market. In the case of the valve 27 which controls the actuator 20 to move the brake to set position, when the electromagnet 29 of thhis valve is de-energized, fluid pressure will be admitted from the pipe through the valve 27 into the chamber of the actuator 20 where it will bear against the diaphragm therein to move the thrust rod 14 to the right. When the magnet 29 is energized, the valve will be moved to block supply pipe 25 and to connect the chamber in the actuator to an exhaust port 30, thereby permitting the pressure in the chamber to escape.

Control valve 28 is arranged in a reverse position, that is, when the electromagnet 31 is de-energized, the fluid pressure supply pipe 25 is blocked and the chamber of the actuator 21 is connected to an exhaust port 32 so as to prevent pressure in the actuator 21 from opposing the movement of thrust rod 14 to the right, as seen in Fig. 3. When magnet 31 is energized, the valve moves to block the exhaust port 32 and to connect the fluid pressure supply pipe 25 to the chamber in actuator 21.

In cases where compressed air is used as a pressure fluid, exhaust ports 30 and 32 will lead to atmosphere. Fliters 26 serve to strain from the fluid any moisture or other impurity which might interfere with the proper operation of the actuators.

In Fig. 4, the actuators 20 and 21 associated with the back brake 5 are shown at the left of the figure and designated as 520 and 521 respectively, the actuators associated with the intermediate brake 6 are shown in the center of the figure as 620 and 621 respectively, and the actuators associated with the front brake 7 are shown at the right of the figure as 720 and 721 respectively. It will be noted that each of these pairs of actuators is equipped with its own individual fluid pressure reservoir 524, 624 and 724 respectively, and that these reservoirs are connected by suitable piping 35 through a suitable filter 36 to a main fluid supply reservoir 37 that is located adjacent to the pump, not shown, by which this fluid pressure is generated. Each of the reservoirs 24 is equipped with an individual check valve 38 for 524, 38 for 624, and 40 for 724, so that in the event of a leak or rupture of the main supply pipe 35 pressure stored in the reservoirs will not be lost. Each of the reservoirs contains a sufficient quantity of fluid to operate the associated brake a sufficient number of times to clear the ride.

Electrical current for operating the system may be commercial alternating current of approximately 110 volts potential and is led into the system through conductors 41 and 42. Conductor 41 is extended through normally closed contacts 43 to conductor 44 that leads to one terminal of the electromagnet 529 of the valve 527 associated with the actuator 520. A branch 45 of the conductor 44 extends to one terminal of the electromagnet 531 of the valve 528 associated with the actuator 521. The other terminals of the electromagnets 529 and 531 are connected together by a conductor 46 that extends to a normally open switch 47, the other side of which is connected to conductor 42. As will be seen in Fig. 2, switch 47 is located on the control panel 50 that is disposed in the control tower 9 in front of the operator of the ride. Also located on this panel and associated with the switch 47 is an indicator or signal 48 which may be a lamp. As will be seen in Fig. 3, when the brake shoe 10 is in its relased position, it engages a lever 51 by which contacts 52 are closed to connect a signal lamp, such as 48, across a source of current, thereby to cause the lamp to burn and indicate to the operator that the brake is released.

Conductor 44 is extended through conductor 54 to one terminal of the electromagnet 629 of the valve 627 associated with the actuator 620, and also through conductor 55 to one terminal of the electromagnet 631 of the valve 628 associated with the actuator 621, the opposite terminals of these magnets 629 and 631 being connected together by a suitable conductor 56 that is connected to normally open switch 57 that is also connected to the conductor 42. Switch 57 is located on the control panel 50 adjacent the intermediate brake indicator thereon, which intermediate brake is provided with a signal lamp 58 adapted to be lighted by the switch 52 of the intermediate brake, as hereinbefore explained.

The normally closed switch 43 by which conductor 44 is connected to one side 41 of the source of electrical current is controlled by the transfer table 8, Fig. 1, and its contacts remain closed so long as the table is in position to extend the trackway from intermediate brake 6 to front brake 7. As soon as the transfer table is moved,

the contacts of switch 43 are opened to prevent the operator from releasing either the back or the intermediate brake while the trackway is interrupted.

Conductor 41 is connected through conductor 64 to one side of the electromagnet 729 of the valve 727 associated with the actuator 720 of the front brake 7, and also through conductor 65 to one terminal of the electromagnet 731 of the valve 728 associated with actuator 721, the other terminals of these magnets 729 and 731 being connected together by conductor 66 which extends through normally open switch 67 and conductor 69 to normally open switch contacts 70 located in the interlocking system of Patent #2,310,039, and thence through conductor 71 to the other side 42 of the source of electrical current. Switch 67 is located on the control panel 50 adjacent the indicator of the front brake thereon, and a signal lamp 68 is associated with this switch. An auxiliary switch 72, which is normally open, may be provided and connected between conductors 66 and 71 to by-pass the interlocking system. This switch 72 will not be located on the control panel 50, but will be located in the control booth 9 in a relatively inaccessible spot therein, so that it is not likely to be inadvertently operated by the operator. This switch, serving as an auxiliary front brake release, will be used only when it is desired to release the brake before a previous train has cleared the block, as might be the case when placing an additional train on the ride.

Back brake 5 may consist of a plurality of sections, each of which is equipped with actuators 520 and 521, or a single set of actuators may be used to operate the several sections. In the event more than one pair of actuators is employed, conductors 44, 45 and 46 will be extended to corresponding magnets of the other pair of actuators, as indicated by the arrows 73. Similarly, conductors 54, 55 and 56 may be extended to other actuators on the intermediate brake 6, as indicated by the arrow 75, and conductors 64, 65 and 66 may be extended to other actuators on the front brake 7, as indicated by the arrow 76.

Control panel 50 may be provided with a pressure gauge 77, preferably either an electromagnetically operated gauge or a closed column fluid pressure gauge, in either case actuated by a suitable actuator 78 that is connected in the main fluid pressure supply pipe 35. This particular type of gauge is used to avoid the necessity of running a branch of supply pipe 35 to the control booth. Associated with the gauge 77 may be a signal light 79 which will be lighted by suitable means not shown, when the pressure falls below a predetermined minimum. If desired, an audible signal may be added to be sounded when the pressure falls to a certain value. The control panel 50 may also contain a signal lamp 80 that is lighted when the transfer table is moved to disrupt the trackway between brakes 6 and 7, and if desired signal lamps 81 and 82 may also be provided and connected to be lighted when trackway brakes of the interlocking system are operated to stop a train on the structure.

In most rides of this kind, the trains are elevated to a topmost portion of the structure by a chain which is driven by a suitable source of power, usually an electric motor. Control panel 50 is preferably equipped with a switch 83 that may be pressed by the operator to actuate the usual electromagnetic devices in the motor control to stop the chain should occasion arise; and associated with this switch 83 is a signal light 84 which may be connected to burn when the chain motor is running in a normal manner, or may be connected to burn when the motor stops, as desired.

To prepare the system for operation, the compressor, not shown, is started to pump up normal operating pressure in the main supply tank 37, fluid flowing from that tank through the supply pipe 35 to the reservoirs 524, 624 and 724 associated with the three brakes. Preferably in the pneumatically operated system shown, this normal operating pressure is about 125 pounds per square inch, notwithstanding that the actuators 20 and 21 will operate the mechanism in a satisfactory manner on a much lower pressure, in fact, as low as 30 pounds to the square inch. The higher normal pressure provides a margin of safety which is desirable and also makes the brake operation more rapid and supplies sufficient power to set the brake when there is a train on it. Electrical power is next applied to the system and the motor that drives the chain of the ride is put into operation in readiness for the passage of trains over the trackway.

Assume first that there are no trains on the trackway, but rather that all of the trains are stored on the storage track. The transfer table will be moved and one of the trains placed upon it preparatory to placing that train on the trackway. As soon as the transfer table 8 moves out of its home position, contacts 43 will be opened without particular effect at this time. The table is then moved back to bring the track upon which the train is resting in alignment with the trackway and the train then pushed onto the front brake 7 in readiness to receive passengers.

As soon as the train is loaded, the operator closes switch 67. Since there are no other trains on the trackway, the block will clear and contacts 70 in the interlocking system of the above mentioned patent will be closed and the previously traced circuits for magnets 729 and 731 will be closed and those magnets energized, magnet 729 moving valve 727 to release pressure from the actuator 720 and permit that pressure to escape through the exhaust port 30. Magnet 731 operates valve 728 to connect actuator 721 to the source of pressure in reservoir 724, operating that actuator to move the brake to released position, whereupon the train moves off of the brake to start its run over the trackway.

As soon as the operator sees the train on the trackway section 2, approaching the back brake 5, he operates control switch 47, thereby closing the circuits of magnets 529 and 531 to cause actuators 520 and 521 to move the back brake 5 from its set to its released position, and the train travels over the brake without any reduction in speed and onto the intermediate brake 6 which is in set position. The intermediate brake brings the train to rest at the unloading platform.

If the operator should observe that the train approaching the unloading platform is traveling at an excessive speed and that there is a likelihood that the shorter intermediate brake 6 will not stop the train at the unloading platform, he removes his hand from switch 47, which restores to normal, thereby de-energizing magnets 529 and 531 which operate their associated valves to re-set the brake. The train will be slowed down by the back brake and when it has reached a safe speed, the operator again closes switch 47 to release the brake and permit the train to proceed to the intermediate brake.

As soon as the train has cleared brake 5, the

operator removes his hand from the switch **47** and the back brake is reset to protect the train at the unloading platform from rear end collision, an unnecessary precaution at the moment since there is assumed that there is but one train on the trackway. As soon as the passengers have disembarked from the train and re-ride fares have been collected from those remaining on the train for another ride, the operator closes switch **57**, thereby energizing magnets **629** and **631** which control their respective valves to release the intermediate brake **6** and permit the train to run forward onto the front brake. As soon as the train has cleared the intermediate brake, switch **57** is released and the intermediate brake re-set to stop a succeeding train, thereby completing the cycle of operation.

In the event that the volume of business necessitates another train to be put on the trackway, as soon as the first train moves onto the front brake **7** the transfer table can be operated to align it with the storage track preparatory to picking up another train. Since the electrical circuits to front brake **7** are not interrupted by contacts **43**, the first train may be released from the front brake as soon as it has been loaded; and should anything happen delaying the moving of the second train onto the trackway, so much that the first train reaches the back brake before the second train is in place, the first train will be stopped on the back brake **5**, and since the control circuits to that brake are opened by contacts **43** there is no possibility of the operator releasing that brake, even though he might get excited and try to do so.

In the normal operation of the ride, three or more trains may be used, provided, of course, the trackway of the ride is of normal length. One of these trains will be on the trackway near the beginning thereof, one at the loading platform, and one on the trackway at or near the approach to the back brake, this spacing being maintained by the interlocking mechanism of the aforementioned patent.

Preferably under these conditions, the train at the loading platform will be loaded and will move off of the front brake **7** before the succeeding train reaches the back brake **5** so that at any one instant the operator need concern himself with but one train.

In the event that after the operator has closed switch **47** to release the back brake his attention is distracted and he releases switch **47**, or if the source of electrical power should fail at the instant, the magnets **529** and **531** by which the back brake is controlled will be de-energized and the brake will move to its set position. If, at the instant that the power fails, the main fluid pressure supply line **35** should likewise break, the back brake would nevertheless be set, since there is a sufficient quantity of fluid in the reservoir **524** to operate the brake several times. Should the supply pipe **525** between the reservoir **524** and actuators **520** and **521** break, or one of the actuators suddenly become inoperative, the back brake **5** will be set by its mechanical reset weight **23**; and while this weight may not be capable of completely setting the brake, if the train is already on the brake, it will nevertheless supply sufficient braking pressure to the train to slow it down so that it will approach the intermediate brake at a safe speed.

Throughout the foregoing, the braking system of the present invention has been described as being manually controlled. There are many advantages to such control; however, in certain instances full automatic control may be advantageous. The control buttons may then be replaced by contacts on a program clock which will then operate the brakes in timed sequence to render the control of the ride fully automatic.

All of the parts employed in the braking system of the present invention are standard parts readily available on the open market, so that in the event of failure of one of those parts it can be quickly replaced without waiting for specially made repairs.

While I have chosen to illustrate my invention by showing and describing a preferred embodiment of it, I have done so by way of example only, as there are many modifications and adaptations which can be made by one skilled in the art within the teachings of the invention.

Having thus complied with the statutes shown and described, my invention, what I consider new and desire to have protected by Letters Patent, is pointed out in the appended claims.

What is claimed is:

1. In a service braking system for an amusement park ride having a trackway: a balanced brake on said trackway; toggle links supporting said brake and arranged when aligned to move the brake to set position to stop a train; means including a fluid pressure actuator for moving said brake to set position; means including a second fluid pressure actuator for moving said brake to a released position in which a train may pass over the brake; a source of fluid pressure in juxtaposition to said actuators; an electromagnetic valve for each actuator, the valve for the first actuator being arranged to admit fluid pressure from said source to said first actuator when the electromagnet is de-energized and the valve for the second actuator being arranged to admit the pressure from said source to the second actuator when the electromagnet is energized, an electrical circuit for said electromagnets, and a normally open manually operable non-locking single throw switch for closing said circuit to simultaneously energize both electromagnets thereby to remove presssure from the first and to apply pressure to the second actuator to move the brake from a set to a released position and to maintain the brake in a released position so long as said circuit remains closed.

2. The combination with an amusement park ride having a trackway and a balanced brake on said trackway adjacent an unloading platform; of fluid pressure actuated means for setting the brake to stop a train; fluid pressure means for releasing the brake to permit a train to move along the trackway; a source of fluid pressure; a valve for controlling the admission of pressure from said source to said brake-setting means; a magnet for operating said valve, said valve admitting pressure to the setting means when said magnet is de-energized; a second valve for controlling the admission of pressure from said source to said brake-releasing means; a second magnet for operating said second valve, said second valve admitting pressure to said releasing means when said second magnet is energized; an electrical circuit over which said magnets are operated; and manual switch means for closing said circuit thereby to operate said magnets simultaneously to release the brake and permit passage of a train along the trackway.

3. The combination with an amusement park ride having a trackway and a balanced brake on said trackway adjacent an unloading platform,

of fluid pressure means for setting said brake to stop a train; fluid pressure means for moving said brake to a released position to permit a train to pass over the brake; a source of fluid pressure; an electromagnetic control valve for each fluid pressure means, the first valve connecting said setting means to said source of pressure when the magnet is de-energized and the second valve connecting said brake-releasing means to said source of pressure when the magnet is energized; and means including a manually operated switch for controlling an electrical circuit over which said magnets are energized in parallel thereby to move the brake from set to released position and permit a train to pass over the brake.

4. The combination with an amusement park ride having a trackway, a balanced brake on said trackway adjacent an unloading platform and a control tower remote from said platform from which the trackway and brake are visible, of a fluid pressure activator for setting the brake to stop a train; a source of fluid pressure; piping connecting said activator to said source; a valve in said piping normally set to admit pressure to the activator; an electromagnet for operating said valve to shut off the flow of pressure to the activator and to permit escape of pressure in the activator; a second activator for moving said

brake to a released position to permit movement of a train along said trackway; piping connecting said activator to said source; a second valve in said piping normally set to prevent pressure from said source from entering said second activator and to vent said activator; a second electromagnet for operating said second valve to close the vent and to admit pressure from said source to said second activator; an electrical circuit for said magnets extending to said control tower, and a manual switch in said tower for closing said circuit thereby to operate said magnets simultaneously to release the brake and permit passage of a train along the trackway.

WILLIAM B. SCHMIDT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
952,494	Atwood	Mar. 22, 1910
1,012,059	Burchard et al.	Dec. 19, 1911
1,576,623	Barr	Mar. 16, 1926
1,638,630	Hannauer et al.	Aug. 9, 1927
1,898,802	Wood et al.	Feb. 21, 1933
2,422,416	Humphrey	June 17, 1947