INSTRUCTIONS

FOR ASSEMBLING AND OPERATING

3/16" SCALE TRAINS

AND

EQUIPMENT

DEVELOPED AT THE GILBERT HALL OF SCIENCE

Instructions, Suggestions

and Helpful Hints

for Planning and Operating

your

RAILROAD

Developed at

THE GILBERT HALL OF SCIENCE

M2502

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PICTURE YOUR RAILROAD EMPIRE IN ADVANCE

In all the world of playdom, Miniature Railroading offers a pastime of never ending thrills and countless hours of pleasure.

There's something fascinating about our great railway systems and their charm reflects on the imagination and inventive genius of youngsters and grown ups with the resultant desire to imitate and reproduce. Such a desire can, and probably will, become an accomplishment with you now that you own an American Flyer Train, for you are actually at the very starting point to enjoy all the thrills that such a hobby presents.

Picture your train speeding over the rails, passing green lighted signals and semaphores — roaring through tunnels and over bridges, smoke streaming from its stack, the noise of its "choo-choo" beating against the walls, and finally slowing down with a grinding of couplers and screeching brakes, as your station looms into view. Picture a scenic background with green fields, winding rivers, waterfalls and lakes — big cities and little towns nestling in the foothills along the right of way — tree-studded slopes with towering mountains and passes, and you have a panoramic view of your railroad amid the scenic grandeur of the great outdoors. You have something tangible to exhibit to your friends, something to view with pride — an example of your skill and handiwork. Such an achievement can easily become a reality, for American Flyer engineers and technical experts of the Gilbert Hall of Science have created dazzling new features in scale model trains and equipment for the further perfection and realism of miniature railroading.

On the following pages you'll find suggestions and helpful hints for planning and operating your railroad empire. Whatever your plan may be, build carefully, for precision and realism. You'll soon realize your hobby has an ever-widening horizon, that there's always something new to add, always something to keep your interest at highest pitch. There's a never-ending fascination in a hobby that carries all the romance of railroading — its air of adventure — its soul stirring sounds — its sense of mighty power that you, as the owner — the big boss or "Brass Hat" as they say in railroading — can control with a finger.

PLANNING FOR OPERATION

In a short time, if not already, you will find that the operating facilities of your railroad empire are too limited. Expansion is in order and the Board of Directors must be approached for funds. It will be much easier to obtain this appropriation if a fairly definite plan of operation is laid out. Your railroad must have work to do in order to exist and you should decide what type of service, passenger or freight, it is to give and what communities and industries it is to serve before you purchase new equipment or prepare your permanent right of way.

You now have a freight or passenger train. You can't leave the train on the main line so you'll need a freight or a coach yard. Leaving the station for a trip around town and back to the station is a rather aimless job for a railroad. Better lay tracks to the next town, at least. Keep in mind the fact that space must be allotted for future expansion.

The freight yard will eventually have a number of tracks and switches with an assortment of cars and a switcher scurrying back and forth picking up cars and backing them onto the make-up track where a transcontinental freight train is being assembled. A powerful locomotive steams up from the round-house and waits to be coupled to this freight. Over near the station a string of coaches stand, ready for a long journey. The train caller, baggage smasher and station hands become alert at the approach of the express. It stops at the station for a moment. Passengers board it while succeeding stops are announced and then amid hisses and chugs the famous Hudson with its club car and Pullmans resumes its race against time.

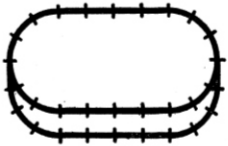
While it screams over a trestle and rushes through a tunnel, the block signals all show a green light indicating a clear road ahead. Meanwhile the freight gets a highball as the man in the signal tower clears it onto the main line. The signal lights, now red since the passing of the express, become green again and the freight train proceeds to a factory siding at the outskirts of town where it picks up a car of scrap iron just loaded by a magnetic crane. Thundering along, it crosses a highway over a massive girder bridge and pulls into an oil depot, uncoupling and leaving several tank cars of gasoline. As it travels on, it enters an open switch onto a passing siding. The switch is then thrown back to the main line leaving the train beneath a water tank, to fill its tender while the excursion train goes through to the Big City, drawn by a sturdy K5-Pacific.

The excursion train finally reaches its destination, The express is now far out into the country whizzing by wayside stations and billboards, whistling as it approaches grade crossings protected by signals and crossing gates. It cuts across the tracks of a branch line with a great clatter of wheels, while the local stops to allow it to pass, and on it goes over miles of rail to some distant city. Meanwhile the freight leaves the siding and continues its journey towards its western terminal.

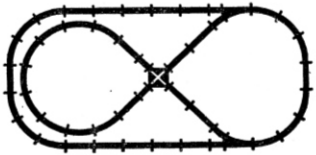
Every bit of this action is automatic or operated from a control board when you use American Flyer equipment. You sit in the dispatcher's chair with train orders before you and run your whole railroad system by simply pushing buttons and throwing levers. Of course, you probably won't be fortunate enough to have all this at once but you must start with a definite plan in mind, similar to the above system, and add to your present equipment, piece by piece, making each purchase increase your sphere of operations along the lines of your plan.

SUGGESTED TRACK LAYOUTS

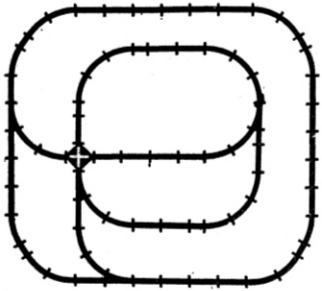
On this and the following pages are suggested track layouts showing the number of pieces of track and the size space needed for them. The size and shape of the space which is available to you for your railroading will determine what type layout you can use. It should be designed to provide for future additions. The more switches, track and equipment you add to your layout, the more interesting your railroad becomes.



No. 8 — Space 50" x 80"
Track: 16 Curve, 12 Straight,
1 pair of Switches



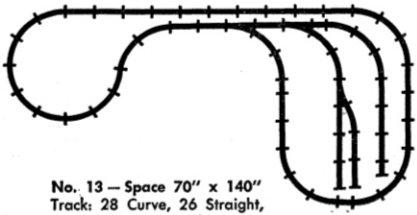
No. 5 — Space 52" x 108"
Track: 21 Curve, 18 Straight,
4 — ½ Straight, 2 — ½ Curve,
1 pair Switches, 1 Crossover



No. 29 — Space 100" x 106"
Track: 31 Straight, 29 Curve, 8 — ½ Straight
2 pair of Switches, 1 Crossover

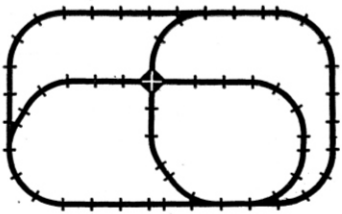
No. 22 — Space 60" x 90"
Track: 26 Straight, 18 Curve,
4 — ½ Straight
5 Left Switches, 3 Right Switches

No. 26 — Space 50" x 70"
Track: 19 Curve,
14 Straight, 1 — ½ Straight,
4 Left Switches,
2 Right Switches

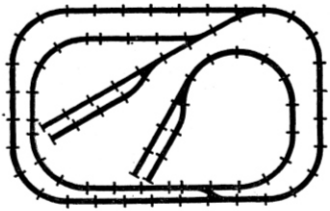


No. 13 — Space 70" x 140"
Track: 28 Curve, 26 Straight,
4 — ½ Straight
2 Right Switches, 1 Left Switch

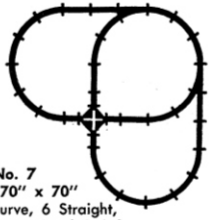
No. 6 — Space 40" x 96"
Track: 18 Curve, 4 Straight,
4 — ½ Straight, 1 Crossover



No. 4 — Space 70" x 115"
Track: 23 Curve, 22 Straight, 7 — ½ Straight
2 pair of Switches, 1 Crossover

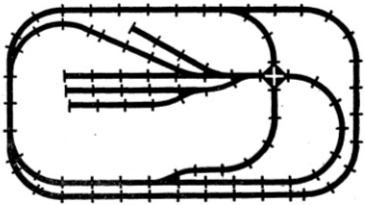


No. 18 — Space 70" x 110"
Track: 28 Curve, 41 Straight,
3 — ½ Straight, 3 pair of Switches

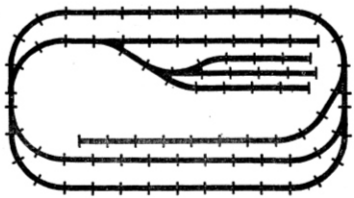


No. 7
Space 70" x 70"
Track: 19 Curve, 6 Straight,
4 -- ½ Straight, 1 pair of Switches,
1 Crossover

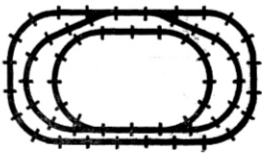
No. 2 — Space 40" x 90"
Track: 20 Curve, 6 Straight,
2 pair of Switches



No. 10 — Space 72" x 128"
Track: 28 Curve, 46 Straight, 3 — ½ Straight
3 —½ Curve, 4 pair of Switches, 1 Crossover

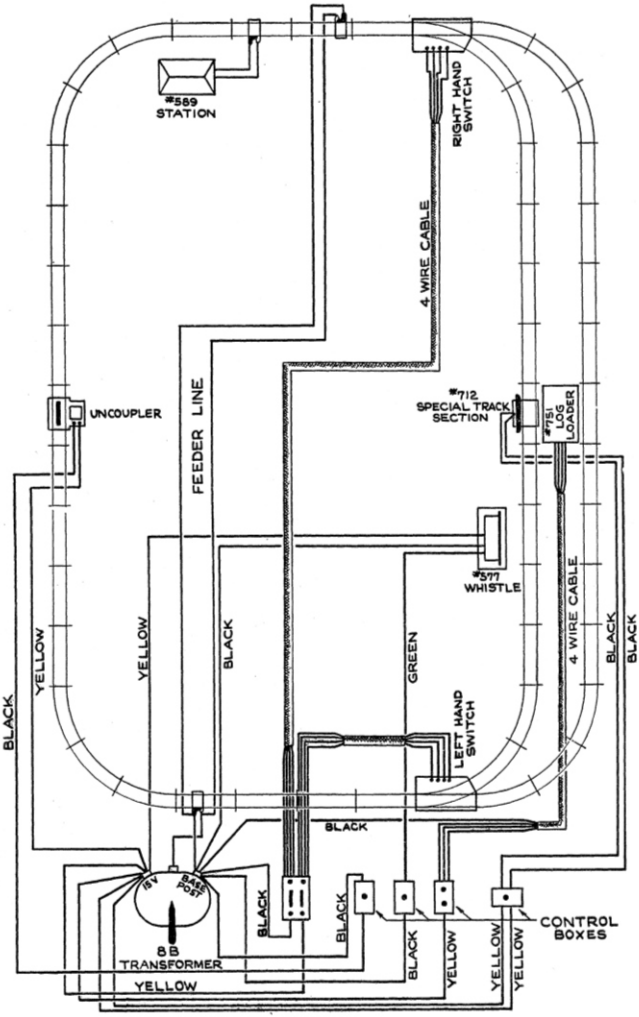


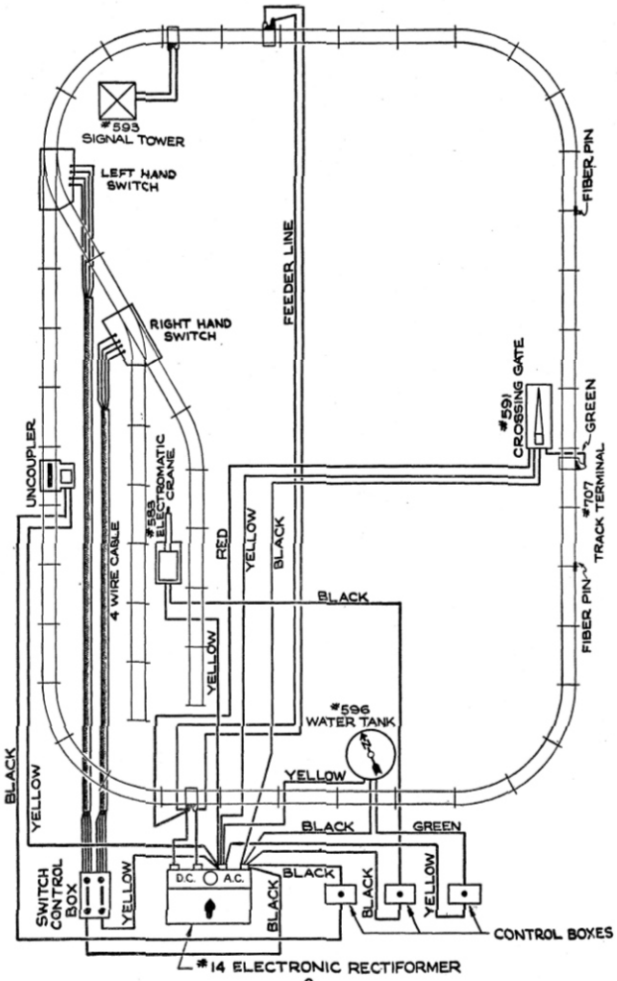
No. 30 — Space 65" x 120"
Track: 22 Curve, 52 Straight, 4 Right Switches
3 Left Switches, 2 — ½ Straight



No. 9 — Space 50" x 90"
Track: 32 Curve, 18 Straight,
2 pair of Switches

How to lay out and wire a Railroad System with a Transformer




#593
SIGNAL TOWER
LEFT HAND
SWITCH
FEEDER LINE
FIBER PIN
RIGHT HAND
SWITCH
#591
CROSSING GATE
GREEN
#7107
TRACK TERMINAL
FIBER PIN
UNCOUPLER
#585
ELECTROMATIC
CRANE
4 WIRE CABLE
RED
YELLOW
BLACK
BLACK
YELLOW
#596
WATER TANK
BLACK
YELLOW
YELLOW
BLACK
GREEN
SWITCH
CONTROL
BOX
YELLOW
D.C.
A.C.
BLACK
BLACK
BLACK
YELLOW
CONTROL BOXES
#14 ELECTRONIC RECTIFORMER

PREPARING THE RIGHT OF WAY

Start your railroading on the floor. Quite a sizable layout can be used on the floor before the inconvenience of moving it outweighs the enjoyment. When your future layout is fairly well in mind commence looking for a place where it may be set up and left intact. The greatest pleasure is derived from your American Flyer Model Railroad when you have found a place in your home where your layout can be set up permanently. If there is a spare room available it makes an ideal location. The attic or cellar can be used provided there is a convenient electric light outlet. Room should be available for the expansion and development of your layout.

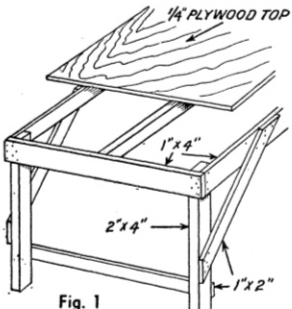


Fig. 1

The first requirement of a permanent layout is a good substantial table. If the accompanying sketch (Fig. 1) is followed a firm table will result. The table top should be 30" above the floor and perfectly level and of an area that will provide space for the layout you intend to develop.

Most Ping Pong tables are satisfactory for use. Minimum track diameter being 40", table top should be not less than 44" wide. Note space required for different layouts as illustrated on pages 6 and 7. Length of table is determined by the layout you decide to make.

When permanent layouts are not practical — by permanent layouts we mean a complete layout on a solid table which will not be moved — it is a good idea to mount track layouts permanently to plywood panels so they can be picked up in sections and stored readily.

Plywood is the best material for the table top. It should be at least ¼" thick. Plywood is sold in sizes 4' x 8' and 5' x 9'. Wherever a joint is made between two pieces of plywood, it is best to place a 2" x 2" cross member under the joint. Before nailing down the table top is should be checked every way to see that it is level. (Table must be absolutely level for satisfactory train operation.)

Railroad right of way and sidings are usually covered with ballast (crushed stone, cinders, etc.). Slate covered roofing paper is a very suitable substitute in constructing your model railroad. It can be obtained from your lumber dealer. This paper comes in rolls and should be laid out so that it will flatten itself before working with it.

Rails can be fastened directly to table top, but rails mounted on roadbed strips, covered with roofing paper, give greater realism. Method of mounting sections of track is shown in Fig. 2.

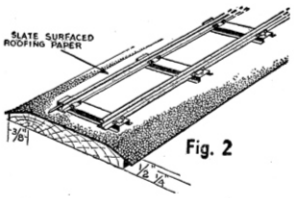


Fig. 2

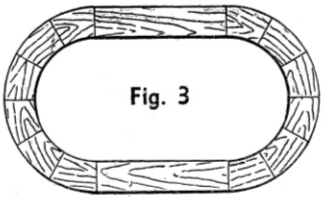


Fig. 3

The top surface of these boards should be 7½" wide for double track or 3½" wide for single track. The material used should be ½" thick, well seasoned white pine or spruce. When constructing the curved roadbed make it up of small segments 1/12 of a circle as shown in Fig. 3. When laying out curved roadbed for double track operation, be sure to temporarily place your track so that you can cut your wood segments for the roadbed correctly. Cover the roadbed with grey slate surfaced roofing paper and you will have a Tru-Model roadbed. Illustrated on pages 6 and 7 are suggested 3/16" Scale track layouts and with each is given the table space required, track and equipment needed.

For best results the track sections should be fastened down with wood screws or small nails using the holes provided in the ties. Do not tighten down on the screws to the extent that the roadbed is distorted.

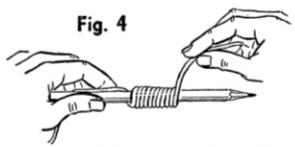
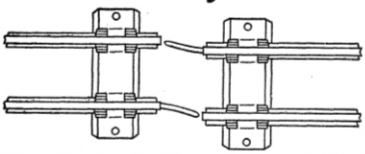


Fig. 4

Along one side of your table top, space should be provided for a control panel upon which you should mount your transformer and controls. Lead wires from your control panel, if so desired, can be placed on the underside of the table, being led to the top surface through holes at points where controlled equipment is placed. A good temporary arrangement for these lead wires is to wind them around a pencil. When the pencil is removed the coiled wire can be stretched between the two points to be connected without leaving a lot of slack wire on your layout. (See Fig. 4.)

HOW TO SET UP A TRACK LAYOUT

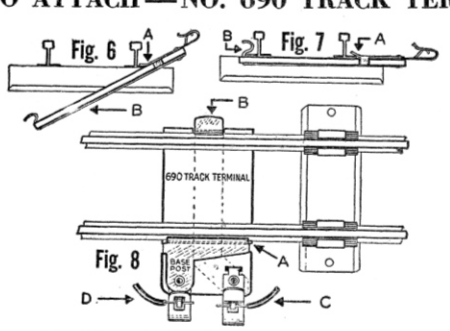
Having decided which layout you wish to assemble, lay the separate pieces of track flat on table and join by inserting the pin of one section as far as it will go in the opening of the next section. CAUTION: Push together. Do not twist, bend or squeeze as this may distort the track and cause the wheels to bind, and result in uneven operation of the train.



It is essential that all the track joints fit together tightly. When you have a good tight track joint it insures a good electrical circut and there is less chance for a voltage drop in the track. If two sections of track fit together loosely this can be remedied by bending both pins outward about 1/16", as shown in Fig. 5, then when they are assembled, the results will be a good connection both electrically and mechanically.

After assembling all the track for your layout be sure and test it both electrically and for operation before you fasten it down. To test it electrically, fasten one wire to the Base Post of the transformer and one wire to the 7 to 15 Volt Post, turn the handle half way open. Be sure that transformer is plugged into a regular 110-120 Volt A.C., 60 Cycle outlet, brush the bared ends of the wires together and see that you get a small spark. This indicates the transformer is alive. Now hold the bared end of one of the wires on one rail and brush the bared end of the other wire on the other rail. If a spark occurs, there is a short somewhere in the layout and it will have to be located by following the procedure described on page 40. If no spark occurs, it is o.k. Now fasten the No. 690 track terminal to the track described below and hook the transformer wires to the terminal clips. Place the locomotive and tender on the track and allow it to run slowly around a few times and if it works o.k. then fasten the track to the base.

HOW TO ATTACH—NO. 690 TRACK TERMINAL



When attaching No. 690 Track Terminal to a section of track, put shoulder shown as "A" against bottom of outside rail as in Fig. 6. Press spring shown at "B" up and around bottom of other rail as in Fig. 7. Take

wires shown as "C" and "D" in Fig. 8, cut off about ½" of insulation from each end of wire. Connect **BLACK** wire from clip marked **BASE POST** on the track terminal to the **BASE POST** on the transformer. Connect the **WHITE** wire from the remaining terminal clip to the **7-15 VOLT POST** on the transformer as shown in Fig. 9, below. If the terminal is used to supply track current to a piece of equipment, the wires "C" and "D" are connected to the two terminals on the equipment unless equipment instructions read otherwise.

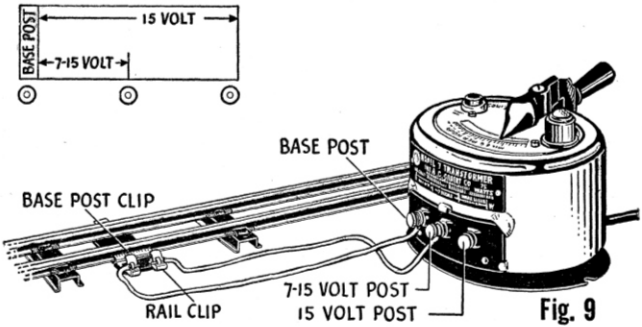
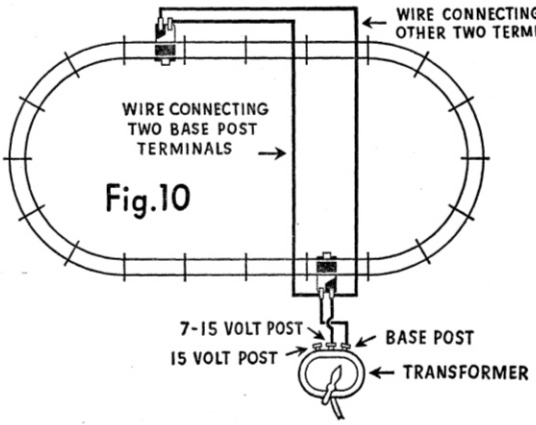


Fig. 9

In many large layouts it is frequently found that the train slows down when it reaches the part of the track which is farthest from the transformer. This can be remedied by using another track terminal at that point and



running feeder wires from the one terminal to the other, being sure that the **BASE POST** clips are connected with one wire and the other two clips are connected together with a second wire. See Fig. 10. Be sure both **BASE POST** clips are fastened to the same rail.

If you are using a No. 14 Electronic Rectiformer follow the directions on page 20 and see Fig. 16.

SCENERY ALONG THE RIGHT OF WAY

With the expenditure of a small amount of money an astonishing variety of scenic effects can be constructed. Railroad yards, highways, farms, forests, and mountains are easily built with ordinary household materials.

Additional realism can be obtained by using train figures around Stations, Crossing Gates, etc. Get a No. 578 Station Figure Set consisting of six hand painted railroad workers, platform truck with baggage and two milk cans.

In one section of your layout you will want your railroad yard with its No. 593 Signal Tower commanding a view of your switch layout. On sidings you can have your steel scrap yard and a No. 583 Electromatic Crane for loading your Gondola Cars. Several oil storage tanks can be made from sections of round cardboard boxes used for oats or salt. This set up against a background of tenement houses should make a realistic setting.

On the highway leading out of the railroad yard where it crosses the tracks a No. 591 Crossing Gate could be used, blocking the path of small automobiles, such as are found in any Toy Store, while your train passes. The highway is made of strips of wood painted a grayish white, its seams marked off with black paint, representing tar. Along the highway a fence can be constructed of thin wood shaped up with a penknife and glued together.

The highway could lead to a rural section, where trees and foliage can be assembled, using a supply of twigs and dry weed roots. These pieces should be dipped in shellac and, when tacky, shaken around in a cardboard box containing finely chopped-up yarn of suitable shades of green. Make-believe grass can be made by using sawdust dyed green scattered on over wet green paint. For weeds, select a good variety of weeds from the nearest vacant lot and dip them in green paint of varying shades. Sand will make a good imitation of gravel and should be sprinkled over a coat of shellac.

A cornfield can be accomplished by removing one side of a piece of corrugated board, such as packing boxes are made of, exposing the ripple surface. To represent earth spread a thin mixture of crack filler over the entire surface. Small pieces of grass stalk should be inserted to represent stubble, and bundles of longer pieces of grass will represent shocks of corn.

A piece of window glass, painted blue-green on the underside to represent water, makes an excellent river or lake, (See Fig. 11.) A realistic shore-

line may be obtained by spreading crack filler around the edges, or by cutting an irregular shaped hole in the table and fastening the glass beneath it. A small boat and a wharf or bridge will complete this interesting feature.

Fig. 11

Mountains serve as a most suitable background for your rural scenery. They are not too difficult to make. A rough frame covered with paper or wire mesh, or even heavy sheathing paper purchased from any lumber company and crumpled into a satisfactory shape supplies the foundation. Over this pour a mixture of asbestos plaster or of crack filler and mold it into the desired contours. Allow a day for it to dry before applying paint. Water colors or artists oil colors may be used. Choose shades of green, brown, yellow and blue which fit the scene you wish to reproduce. By copying nature's color-scheme and blending carefully where two colors come together a very real and satisfying effect will be obtained.

POWER SUPPLY– "SAFETY FIRST" TRANSFORMERS

Before purchasing a transformer, it is necessary to know the type of current which you have in your home. If you are not absolutely sure of this, your electric light company will be only too glad to tell you the voltage and whether it is Direct Current or Alternating Current and if A.C., the number of cycles. This information is important in order that you may select the proper transformer for your train operation.

While these factors determine the type of power supply you need, the wattage is determined by the size of your electric trains and the number of accessories you have. The wattage of a transformer is a measure of its capacity. The higher the wattage, the larger the train and the more equipment it will operate.

AMERICAN FLYER Transformers are manufactured in four wattages —75, 100, 150 and 250 watts. Consult the latest American Flyer catalog or your dealer for full information as to the proper transformer to be used with your train layout. It is always best to purchase a transformer with greater wattage than the one required to operate the train alone. In this way, you will be able to provide adequate current for the operation of any additional equipment which you may later decide to use on your railroad. All American Flyer Transformers have a 15 volt maximum output. In determining what

transformer to use, make your selection based on the amount of wattage and not on the voltage.

All American Flyer Transformers except the No. 2 are equipped with an Automatic Circuit Breaker. When a short circuit or overload occurs the red pilot light lights and the breaker opens the circuit to prevent damage to the transformer. When the short or overload has been cleared the breaker is reset by simply pushing the "Reset Button" located on the top of the transformer.

The No. 2B Transformer is not equipped with the red light or reset button, but has a built in thermostatic circuit breaker which automatically resets itself when the short circuit has been corrected. If the short is not corrected it will continue to go off and on until the short is removed.

The Circuit Breaker protects both the 7 to 15 volt circuit and the 15 volt constant circuit against short circuit or overload.

The No. 8B and 12B Transformers are equipped with a green "Power On" indicating pilot light.

The No. 12B Transformer has a line switch which can be used instead of pulling the plug to shut off the power supplied to the transformer when it is not in use.

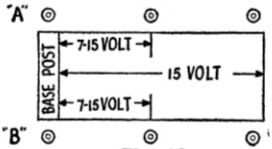


Fig. 14

The No. 12B Transformer is a Dual Transformer. It has two control levers and two corresponding sets of three terminals, as shown in Fig. 14. Each throttle operates separately, thus permitting the operation of two or more trains simultaneously on two layouts (Fig. 12), or two trains simultaneously on two sections of the same layout as shown in Fig. 13.

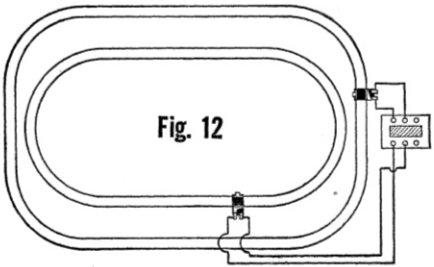


Fig. 12

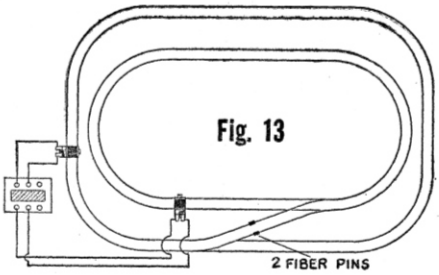


Fig. 13

AMERICAN FLYER TRANSFORMER DATA

Transformer No.	A. C. Voltage	Capacity	Frequency	Variable Voltage Range	Fixed Voltage
2	115	75 Watts	60 Cycles	7-15 Volts	15 Volts
2B	115	75 "	60 "	7-15 "	15 "
6A	115	75 "	25 "	7-15 "	15 "
8B	115	100 "	60 "	7-15 "	15 "
12B	115	250 "	60 "	7-15 "	15 "

14 — See page 18.

25 CYCLE TRANSFORMERS. For 25 cycle Transformers, American Flyer offers the No. 6-A. This has the same respective wattage rating as No. 2.

TO CHECK THE TRANSFORMER. Press Reset Button to be sure it is down. Turn the lever half on. Connect one end of a piece of wire to the Base Post and touch the 7 to 15 volt Post very lightly with the other end. (DO NOT HOLD THE WIRE ON THE 7-15 VOLT POST. JUST TOUCH IT LIGHTLY.) If a spark occurs the transformer is O.K. If no spark occurs the transformer is defective unless the fault is at the wall socket which can be checked by plugging in a bridge lamp.

CAUTION: Ninety per cent of all transformer trouble is caused by permitting the train to lie across the rails and cause a short circuit when it jumps or is knocked off the track. If permitted to remain in this position the cars or locomotive cause a short circuit and the transformer will burn out.

While AMERICAN FLYER TRANSFORMERS will easily stand 25 per cent overload without harm, we recommend disconnecting the transformer from the house current immediately when you are not going to use your train for even a short period or when the train jumps the track.

STANDARD REMOTE CONTROL LOCOMOTIVES

The direction of all American Flyer Locomotives equipped with Standard Remote Control can be governed from a distant point. This unit has a sequence reversing switch and performs a cycle of four steps, forward, neutral, reverse and neutral. If the locomotive is moving forward, and the current is turned off, then on, the train will stop with lights illuminated. If the current is again turned off, then on, the train will reverse. To make the train go forward again it is necessary to repeat these operations, in other words, the current must be turned off and on twice.

You can turn the current on and off by moving the lever of the transformer. If your transformer is equipped with a reset button you can use it in place of the lever.

To make the control inoperative, that is, to make the train continue in the same direction, irrespective of the number of times the circuit is broken, shift the locking lever protruding from the locomotive near the control unit. This locks the control. The lever must be moved into the locking position while the current is on and the locomotive is proceeding in the desired direction.

How to Hook-up and Operate American Flyer's Electronic Propulsion Locomotive and No. 14–150 Watt Electronic Rectiformer

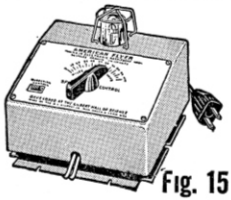


Fig. 15

The No. 14 Electronic Rectiformer is one of the American Flyer's new developments in which your regular 110-120 Volt Alternating Current is cut down to 15 Volts A.C. for use with accessories, and also has a variable 7 to 15 Volt Direct Current source to run the powerful Alnico Permanent Magnet motors in the Electronic Propulsion locomotives. This unit is new and revolutionary in the fact that it changes the current from A.C. to D.C. by a new type Electronic tube, and is equipped with a double automatic thermostatic circuit breaker to protect both the A.C. and D.C. current.

CAUTION: — The No. 14 Electronic Rectiformer cannot be plugged into a 110 Volt Direct Current outlet but must be used with regular 110-120 Volt Alternating Current.

The difference between an Electronic Propulsion locomotive and one with Standard Remote Control is that the Electronic Propulsion locomotive has an Alnico Permanent Magnet field instead of a wound or electro-magnetic field, and runs on Direct Current instead of Alternating Current; therefore, it automatically changes direction of travel when the polarity of the current is changed in the track. If you stop the train and start it again, it will go in the same direction as when you stopped it. In other words, if it was going forward, it will be going forward again; if it was going backward, it will continue to go backward until the direction is purposely changed. If the train is shorted, when the short is corrected, the train will continue in the same direction as when it was stopped.

Electronic Propulsion has a big advantage when used in connection with Block Signals, Semaphores and other train controlling equipment. When the train is stopped it will start in the same direction when equipment automatically causes it to proceed. At the same time, you can control your train in either direction; in other words, the equipment controls the train without affecting the direction of travel.

A reversing switch is mounted on the No. 14 Electronic Rectiformer and by simply throwing it you reverse the direction of the train. The method of wiring the track layout for use with Electronic Propulsion locomotives is very simple. You follow the regular directions for laying the track and fastening the track terminal, as shown on page 12. Then hook the two wires from the track terminal to the two terminal posts on the No. 14 Rectiformer which are marked "Direct Current for Trains." This will give you a variable voltage of from 7 to 15 Volts D.C. for train operation. See Fig. 16.

There are also two terminal posts marked "Alternating Current for Accessories." THESE TWO TERMINALS ARE USED INSTEAD OF THE BASE POST AND 15 VOLT POST ON REGULAR TRANSFORMERS IN ATTACHING EQUIPMENT AND AUTOMATIC CARS.

Another exclusive feature is that an Electronic Propulsion locomotive and a Standard Remote Control locomotive can be run on the same track at the same time, and each can be controlled individually with a No. 14 Electronic Rectiformer. You can keep one train at a stand-still on the track while moving the other train forward or backward. You can run both trains at the same time in the same direction, or you can run both trains at the same time in opposite directions.

The reverse switch on the No. 14 Rectiformer controls the direction of the Electronic Propulsion locomotive and the shutting off of the speed controlling handle controls the direction of the Standard Remote Control locomotive.

A short circuit anywhere in the train, track or equipment is indicated by a steady blinking of the tube. Should your accessories continue to func-

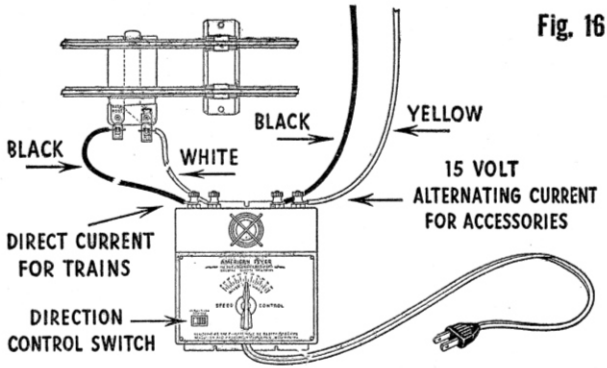


Fig. 16

tion and the train refuse to operate, it is an indication that the tube may be at fault. If an American Flyer Service Station is available in your locality, take the tube there and have it checked. In case you cannot locate a service man, the following suggestion will help you to determine if the tube is the cause of your trouble. Remove all locomotives and cars from the track, turn the speed lever to 100 M.P.H., check to see if the tube shows a dull red glow, if not, tube should be replaced; if the red glow is observed, short circuit the track with a piece of metal or screw-driver and if the tube is functioning properly, it will immediately show a bright blue light and will start blinking. If this bright blue light does not show up, the tube should be replaced. They are available at your local American Flyer train dealer.

Instructions for the hook-up and use of the No. 14 Rectiformer, with American Flyer trains and accessories are shown in Fig. 16.

EQUIPMENT

American Flyer Trains can be coupled, uncoupled, reversed in direction, stopped and started again in the same direction, switched from one track to another, caused to operate on a Dead Block System with one or more trains on the same layout; all this can be controlled from a central point any distance from the tracks.

On the following pages you will find complete instructions for the hook-up and use of all American Flyer equipment and operating cars.

NO. 720 REMOTE CONTROL AND NO. 722 MANUAL CONTROL TRACK SWITCHES

After you have acquired a train set and ran it for a while, you soon will want to do more than just run it around a circle or oval. You will want

to be a "dispatcher" and shunt your train onto sidings, have double layouts and run trains from one layout to another, have double lanes of traffic and switching yards. You will find after checking over the various track layouts shown on pages 6 and 7, that most of them require switches. These are only suggested layouts and most railroaders would rather design their own layouts to fit their respective needs.

American Flyer switches are very simple to hook-up and operate. Just set the switches in the track layout the same as a piece of straight or curved track and hook up the wires from the control box as shown in Fig. 17.

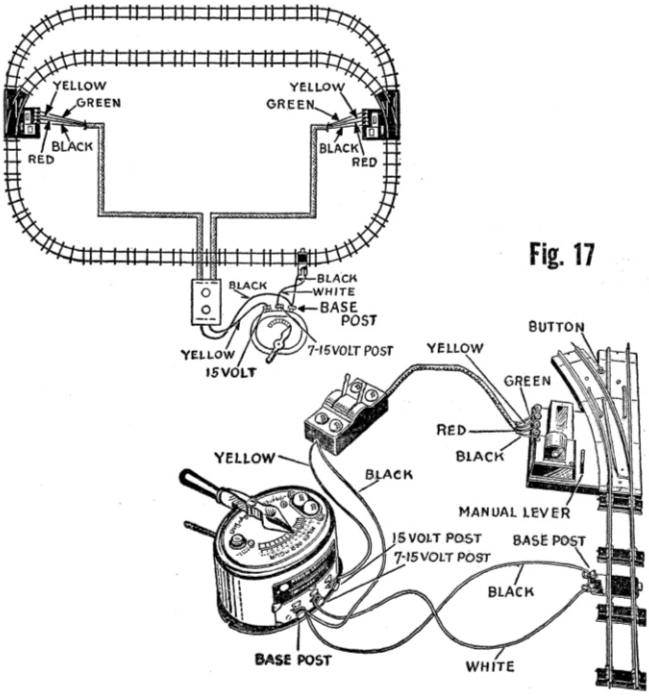


Fig. 17

For Use With Transformer

Hook the single **YELLOW** wire from the control box to the **15 VOLT POST** on the transformer and the single **BLACK** wire to the **BASE POST.**

The two 4 wire cables go to the two switches and the various colored wires are attached to the corresponding colored terminals. With this hook-up the switch and control box lights are always lighted and you know at any time which way the switch frog is set.

For Use With No. 14 Electronic Rectiformer

Follow the same procedure as with transformer only hook the single **YELLOW** and **BLACK** wires to the **POSTS** marked "Alternating Current For Accessories."

These new AMERICAN FLYER switches are really two kinds of switches in one, that is, they can be used in the conventional manner or by simply moving a button, two or more trains can be operated at the same time without the use of special control buttons or block signals.

To use the switches in the regular manner, move the button toward the position marked regular operation as far as it will go.

To operate two or more trains on the same layout at the same time, move the button to position marked 2-train operation. With the button in this position trains will operate only on the loop the switch is set for. If the switch is set for the inside loop, any train which happens to be on the outside loop will stop. When the switch is reset for the outside loop, the train in this loop will start and the train in the inside loop will stop.

When the switches are used for two train operation they MUST be operated in pairs, that is, they must both be set for the same loop, except in the case of spur lines where the end of the track is not connected to any part of the layout.

Use the Control Box levers to throw the switch frogs, do not throw them with the manual lever unless frog should stop in a center position or not close properly; then use the manual lever to throw frog all the way over.

To change lamp bulb, remove the two screws on lamp housing and replace lamp with a 3½ G-18 Volt lamp, No. 453.

The No. 722 Manual Control switch is used the same way as the No. 720 Remote Control switch with the exception that it operates with a manual lever instead of electrically, and is not lighted. Also, there are no wires to hook up.

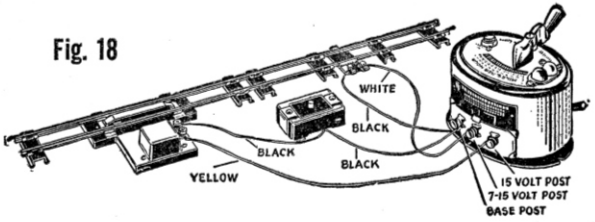
COUPLING AND UNCOUPLING OF CARS

American Flyer cars automatically couple on curves, sidings, switches or anywhere on your layout and do so without the use of clumsy and unsightly coupling devices. By simply backing your train to the car you want to pick up, the couplers snap together and if you reverse your locomotive to move forward you have your train assembled. To uncouple cars automatically is just as simple.

INSTRUCTIONS FOR OPERATING REMOTE CONTROL AUTOMATIC UNCOUPLER NO. 705

The operation of the uncoupler is very simple. Remove a section of straight track from your layout and replace it with the uncoupling unit. See Fig. 18.

Fig. 18



For Use With Transformer

Connect the **YELLOW** wire from one of the terminals on the uncoupler to the **15 VOLT POST** on the transformer.

Connect the long **BLACK** wire from the other terminal on the uncoupler to a clip underneath the control box.

Connect the short **BLACK** wire from the other control box clip to the **BASE POST** on the transformer.

For Use With No. 14 Electronic Rectiformer

Hook the **YELLOW** and **BLACK** wires to the two terminals marked "Alternating Current For Accessories."

The uncoupler is now ready to operate. As the cars pass over the uncoupler ramp, press the button, the ramp will snap up and uncouple the cars.

The couplers on American Flyer cars are adjusted and tested before packing. The correct adjustment is to have the curved or lowest part of the coupler even with the top of the rails. If the cars do not couple or become uncoupled by themselves while running, the coupler may be out of adjustment. It can be corrected by placing the car on a section of track and bending the coupler either up or down to put it in the correct position.

INSTRUCTIONS FOR NO. 706 UNCOUPLER

The operation of No. 706 Uncoupler is the same as the No. 705, only with it you can uncouple cars on a curve as well as on a straight track. It can be attached anywhere along the track simply by placing it underneath

the track between two ties, so that the lower edge of one rail rests under the raised portion of the metal strip with the U-shaped cutout. Turn locking lever so it clamps over the lower part of the other rail. Note Fig. 18A.

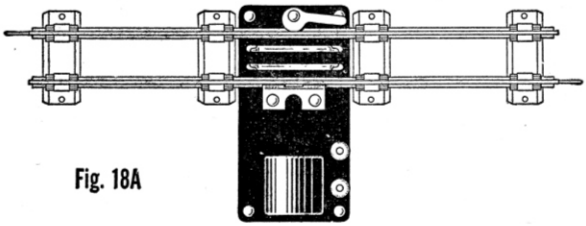


Fig. 18A

Connect wires to No. 706 the same as on No. 705, which is illustrated in Fig. 18.

AUTOMATIC ACTION CARS

The use of automatic action cars greatly increases the enjoyment of model railroading. You can dump a load of logs, coal or scrap metal, then load the cars again by means of automatic loading units operated by remote control. You can unload armored cars and pick up and deliver mail bags on the fly.

All this can be done by using the automatic cars made by American Flyer, and they are easy to hook up and operate.

Each car comes equipped with a special rail section which clamps on the track, control box and wires.

HOW TO ATTACH THE NO. 712 AND NO. 713 SPECIAL RAIL SECTION FOR THE OPERATION OF ACTION CARS

The No. 712 special rail section is used to operate the No. 715 Automatic Army Unloading Car, the No. 716 Coal Dump Car, and the No. 717 Log Unloading Car.

The No. 713 special rail section is used to operate the No. 718 Mail Pick-Up Car. They are the same, with the exception that the No. 713 has a post attached to hold the mail bag and wire connections are different.

They are attached to the track in the following manner:

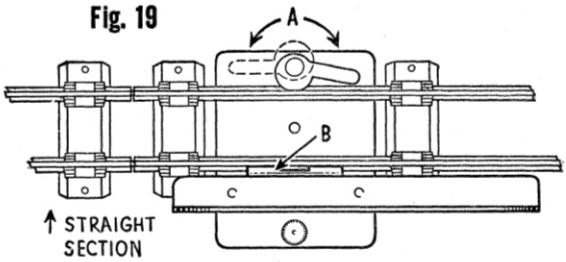


Fig. 19

With the locking lever "A" facing left, as shown by the dotted line in Fig. 19, insert the fiber base of the special rail section between the first and second ties on the desired section of straight track, at a point in your layout where you want the car to operate.

See that the bottom portion of the outside rail rests underneath the raised part of the metal strip "B," then turn the locking lever "A" to the right as far as it will go, so it clamps over the bottom part of the inside rail. As shown in Fig. 19, there must be at least one section of straight track in front of the special rail section so that any rolling stock coming out of a curve will not overhang enough to cause interference.

The cars should be placed on the track so the small metal contact shoe which protrudes from one of the trucks, is on the same side as the special third rail on the No. 712 or No. 713. Then when the train is run around the track and the car is stopped so the contact shoe rests upon the contact rail and the button is pushed, the car will operate.

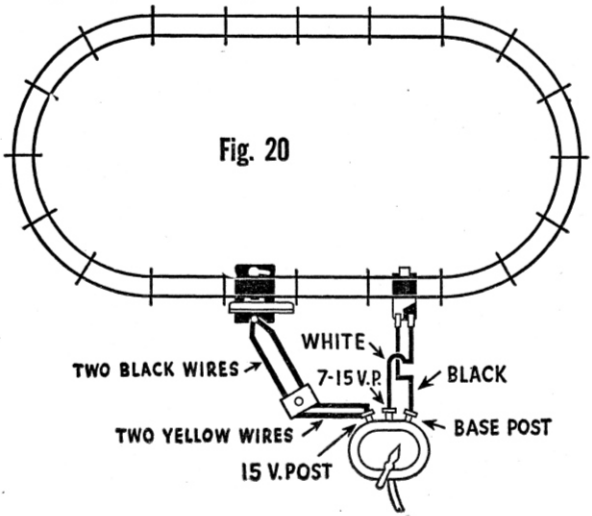


Fig. 20

Directions for Wiring No. 712 to a Transformer

Connect the wires from the transformer to the track terminal, as described on the No. 690 Track Terminal envelope.

Connect the **TWO YELLOW** wires from the Control Box to the **15 Volt Post** on the transformer.

Connect the **TWO BLACK** wires from the Control Box to the Terminal Post on the No. 712 Special Track Section. See Fig. 20.

Directions for Wiring No. 712 to a No. 14 Electronic Rectiformer

Connect the two wires from the track terminal to the two posts on the Rectiformer marked "DIRECT CURRENT FOR TRAINS."

Connect one of the **BLACK** wires from the Control Box to the Terminal Post on the No. 712 Special Track Section.

Connect the other **BLACK** wire to the **Base Post** clip on the track terminal.

Connect the **TWO YELLOW** wires to the two posts on the Rectiformer marked "ALTERNATING CURRENT FOR ACCESSORIES." See Fig. 21.

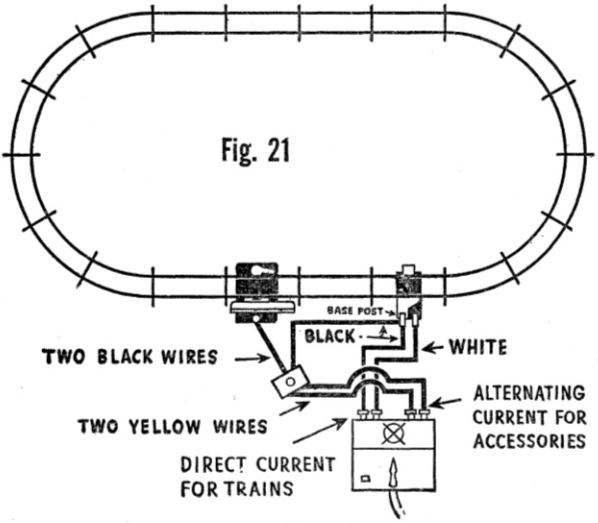


Fig. 21

No. 715 Automatic Army Unloading Car

Place the car on the track, place the tank on the car so that the rear axle fits into the two slots in the upright piece and the front wheels are over the long slot in the platform. See Fig. 22.

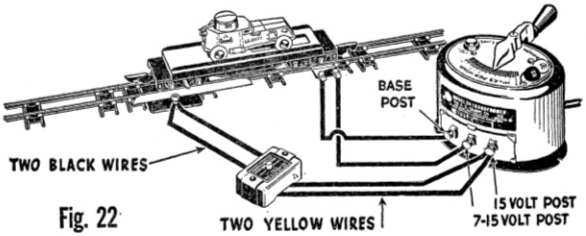


Fig. 22

Run the train around the track, and stop it so that the Contact Shoe, which protrudes from the truck, is resting on the special contact rail. Press the Control Button until the platform swings out and the tank rolls off the car. Then release it and the platform will swing back into place automatically.

No. 716 Dump Car

Place the car on the track and place the tray opposite the special rail so it will be underneath the door of the car when it is stopped, and making contact, and the coal will not spill out on the floor when the door is opened. See Fig. 23.

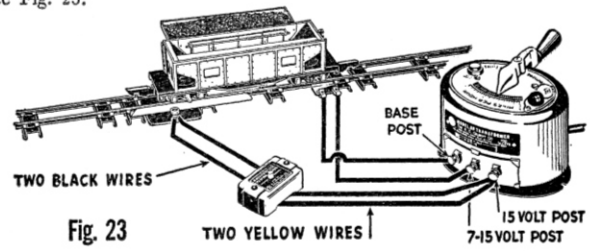


Fig. 23

Place a small amount of coal in the car, run the train around the track stopping it so that the contact is on the special contact rail. Press the button and the door will open, allowing the coal to drop into the tray. Release the button and the door will close.

To add much more fun and realism to the train, the cars can be loaded by Remote Control by using the No. 752 Seaboard Coaler.

No. 717 Log Unloading Car

Place the car on the track, place the three logs on top of it, then run the train around the track, stopping it so the contact shoe is resting on the special rail. Press the Control Button and the platform will tip, unloading the logs. Release the button and the platform will drop back in place. See Fig. 24.

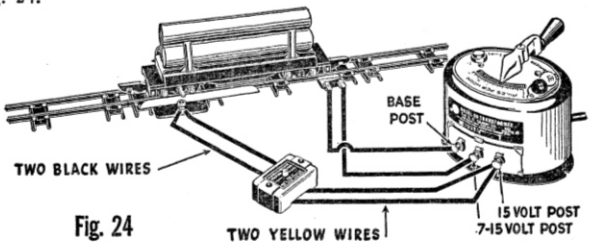


Fig. 24

One of the greatest play value pieces of train equipment is the No. 751 Log Loader which will load logs onto the above car by remote control, and the log car can also be used to dump the logs onto the log loader for reloading.

No. 718 Mail Pick-up Car

Directions for Wiring to a Transformer

The No. 713 Special Track Section is used to operate the No. 718 Automatic Mail Pick-up Car and wires are connected as follows:

Connect the wires from the transformer to the track terminal as described on the No. 690 Track Terminal envelope.

Connect the **LONG YELLOW** wire from the **Terminal Post** on the No. 713 Special Rail Section to a clip underneath the Control Box.

Connect the **SHORT YELLOW** wire from the other clip underneath the Control Box to the **15 Volt Post** on the transformer. See Fig. 25.

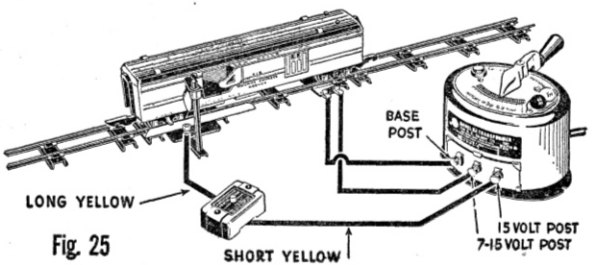


Fig. 25

If you are using a No. 14 Rectiformer, connect the **SHORT YELLOW** wire to the ALTERNATING CURRENT POST nearest the center.

Place the car on the track so that the opening and hook on the car are toward the front of the train, on the same side of the track as the special contact rail No. 713, and the train should be run in a forward direction. See Fig. 25.

Hang one of the mail bags on the standard, start the train and as it approaches the special track section, press the button and hold it down. When the mail car passes over the special track, the hook will swing out and pick up the mail bag.

After the car has passed, release the button. Hang the other mail bag on the standard and repeat the operation just mentioned, and the car will automatically pick up the mail bag and deliver the one it picked up on the first trip.

ILLUMINATED EQUIPMENT

American Flyer offers a wide variety of illuminated accessories to help make your railroad more realistic. You will find listed in the American Flyer Catalog, Stations, Signal Towers, Street Lights and Bridges which are lighted. These all come equipped with wires and No. 690 Track Terminals and can be attached anywhere along the train layout, but if connected direct to the track, they will not light when the transformer is shut off. So, to keep them

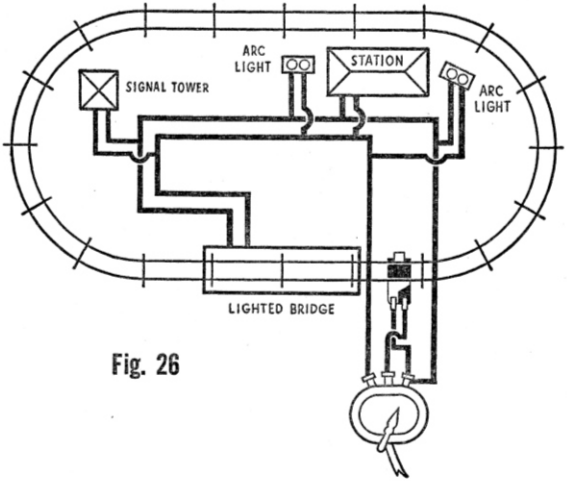


Fig. 26

lighted at all times they should be connected to the **BASE** and **15 VOLT POSTS** on the transformer, or if using an Electronic Rectiformer, they should be connected to the two alternating current taps. In this way they will get a constant 15 Volt Current irrespective of the position of the speed control lever. To do this it is advisable to run two wires from the above named posts around your layout and connect the signals to them as shown in Fig. 26.

Since all American Flyer transformers and rectiformers have a maximum output of 15 Volts, there is no danger of wiring lighted accessories and the chance of burning out lamps by high voltage is eliminated.

Hook Up and Use of the No. 582 Blinker Signal

Assuming that your train is hooked up according to the preceding instructions, it is very simple to add a No. 582 Blinker Signal to your layout. Study Fig. 27, then:

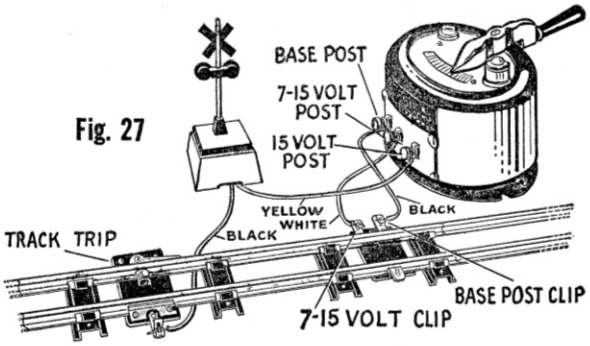


Fig. 27

Attach the No. 696 Track Trip to a straight section of track at the desired location in your layout. Be sure the locking lever locks on the same rail as that to which the **BASE POST** wire connects.

Connect the **BLACK** wire from the signal to the clip on the track trip.

Connect the **YELLOW** wire from the signal to the **15 VOLT POST** on the transformer.

If you are using an Electronic Rectiformer, the **YELLOW** wire is connected to the inside **ALTERNATING CURRENT POST.**

The signal is now ready to operate. If you have followed the instructions carefully, the lights will blink as the train passes over the track trip.

Hook Up and Use of No. 584 Bell Danger Signal

The No. 584 Bell Danger Signal is hooked up exactly the same as the No. 582 Blinker Signal, described in the preceding paragraph, and when the train passes over the track trip, the light flashes and the warning bell rings.

Attaching the No. 596 Water Tank

All steam locomotives have to replenish their supply of water every so often and the railroads have water tanks situated along the right of way at various points so this water is available. An addition of one of these units adds to the realism and play value of your layout.

It is simple to connect. Study the wiring diagram in Fig. 28 and proceed as follows:

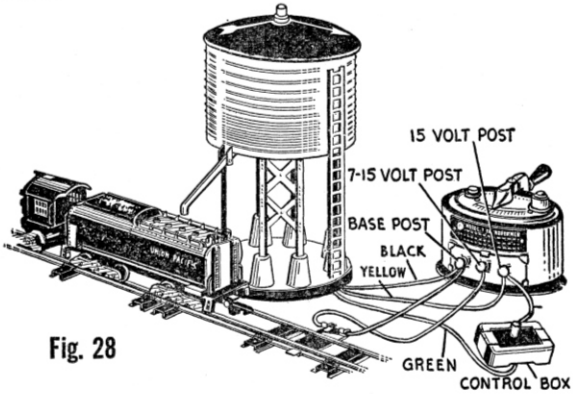


Fig. 28

Place the water tank alongside the track so the spout can be lowered over the center of the track.

Then connect the **BLACK** wire to the **BASE POST** on the transformer.

Connect the **YELLOW** wire to the **15 VOLT POST** on the transformer.

Connect the **GREEN** wire to one of the clips underneath the control box.

Connect the **SHORT YELLOW** wire from the other control box clip to the **15 VOLT POST** on the transformer.

If you are using an Electronic Rectiformer, connect the wires to the two alternating current posts.

If instructions have been followed the Air Beacon Light should be lit and the spout should lower when the control button is pressed.

Instructions for the Hook Up and Operation of No. 594 Animated Track Workers

Thousands of men all over the country work every day to maintain the various railroad tracks and keep them in good order to insure safe, smooth travel, and the No. 594 Animated Track Workers are just such a group of men busy at work along the track. When the train approaches, the Watchman comes forward with a danger signal and the men operating the tampers step back from the track to avoid injury.

To hook up this piece of equipment, the first step is to determine its approximate location in your layout.

Next insulate the outside rail for 3 or 4 sections of track on both sides of the device. Do this by removing one steel track pin at each end of this insulated block and replacing them with the 2 fiber pins included with the unit.

Now place the the track workers in front of the track in the desired location, so the men with the tampers face the rail.

TO HOOK UP TO A TRANSFORMER

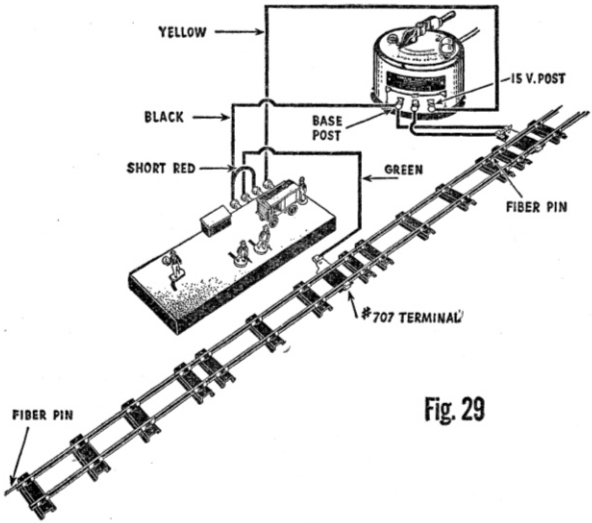


Fig. 29

Study Fig. 29, and proceed as follows:

Fasten the No. 707 Track Terminal in the insulated section so the **BASE POST** clip is clamped on the insulated rail.

Connect the **YELLOW** wire from the **YELLOW** Terminal to the **15 VOLT POST** on the transformer.

Connect the **BLACK** wire from the **BLACK** terminal to the **BASE POST** on the transformer.

Connect the **GREEN** wire from the **GREEN** terminal to the No. 707 Track Terminal located in the insulated section.

Connect the **RED** and **BLACK** terminals together with the short **RED** wire.

TO HOOK UP TO AN ELECTRONIC RECTIFORMER

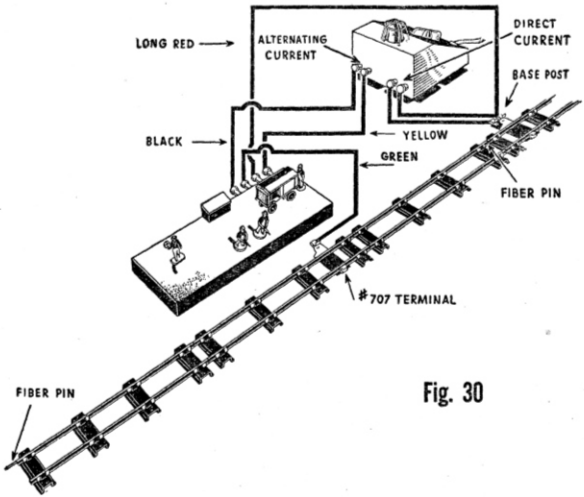


Fig. 30

Study Fig. 30, then fasten No. 707 Track Terminal in the insulated section so the **BASE POST** clip is clamped on the insulated rail.

Connect the **YELLOW** wire from the **YELLOW** terminal to the inside alternating current post on the Rectiformer.

Connect the **BLACK** wire from the **BLACK** terminal to the outside alternating current post on the Rectiformer.

Connect the **GREEN** wire from the **GREEN** terminal to the No. 707 Track Terminal.

Connect the long **RED** wire to the **BASE POST** terminal which supplies current to the track.

The track workers are now ready to go to work. The man tending the compressor is the switch. Turn him so he faces the compressor. This will start the men working. As the train enters the insulated block, the watchman will step forward and the tamper operators will step back. When the locomotive and tender have left the insulated block, the men will resume work.

Operating the No. 591 Crossing Gate

Wherever the railroad tracks cross a highway, you will always find some means of warning the motorists when the train approaches. At the more dangerous crossings, the railroads have provided gates operated by a watchman who stays either in a small shanty at the crossing, or in a tower overlooking several crossings, and when a train approaches, he lowers the gates to prevent pedestrians and motorists from entering upon the tracks, thereby saving many lives and lots of injuries. This very action can be had by using American Flyer's No. 591 Crossing Gate which has a double gate to protect the roadway and the sidewalk, and has a red lantern which lights when the gate is down.

To hook up the No. 591 Crossing Gate, use the same wiring instructions and method of insulating the track as is described in the preceding directions for the No. 594 Track Workers. Then, when the train enters the insulated block, the gate will automatically lower and the lantern will light. After the train has left the block the gate will raise and the light will go out.

OH BOY! JUST LISTEN TO THAT WHISTLE BLOW!

To every railroad man that deep throated tone of the locomotive whistle is real music, and American Flyer engineers have made it possible for you to reproduce that very soul stirring sound in your own train layout. The No. 577 Whistle serves two purposes — it is both a lighted billboard to add realism along the track, and a real toned whistle on which you can blow either short or long blasts and reproduce any signals used in real railroading.

Note the wiring diagram in Fig. 31:

Connect the **YELLOW** wire to the **15 VOLT POST** on the transformer.

Connect the **BLACK** wire to the **BASE POST** on the transformer.

Connect the **GREEN** wire to one of the clips underneath the Control Box.

Connect the **SHORT BLACK** wire from the other Control Box clip to the **BASE POST** on the transformer.

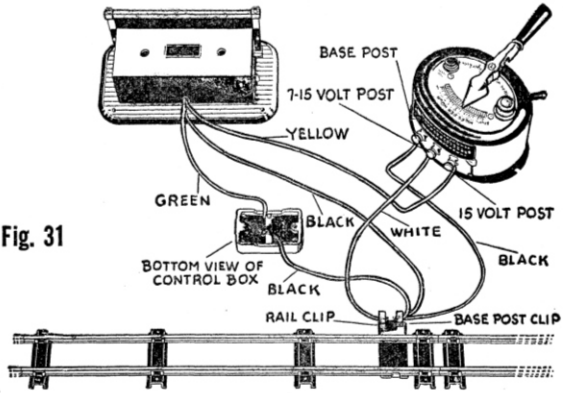


Fig. 31

If You Are Using a No. 14 Electronic Rectiformer:

Connect the **YELLOW** wire to one of the Alternating Current taps. Connect the two **BLACK** wires to the other Alternating Current tap. The whistle is now ready to operate and both lights should be lit. Press the button and the whistle will blow.

If either lamp should burn out, replace with a 14 Volt, No. 440 Lamp.

OILING — To lubricate the motor, place a few drops of oil on the shaft bearings. Top bearing can be reached through a hole in top of the housing and bottom bearing is covered with a felt wick which can be saturated with oil. Do not get oil on the motor brushes as this will gum up the commutator.

Standard Whistle Signals Used Throughout the Country by all Railroads

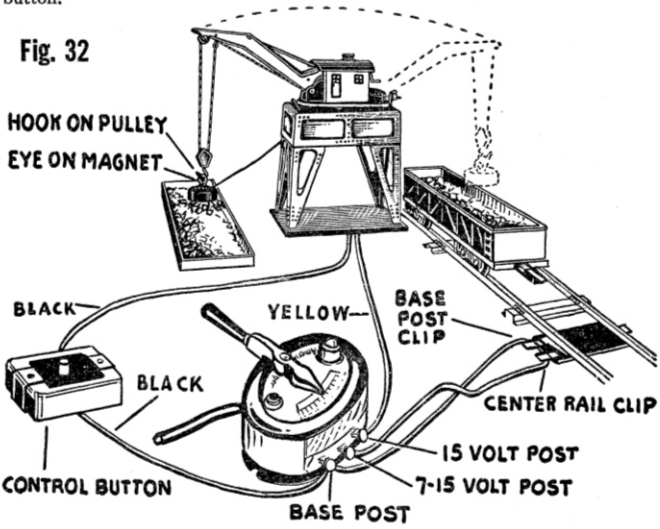
Approaching public grade crossing — Two long, one short, one long.
Approaching station, junction or railroad crossing — One long.
Alarm for persons or animals on track — Succession of short toots.
Apply brakes, stop — One short.
Release brakes, proceed — Two long.
Flagman protect rear of train — One long, three short.
Flagman return from west or south — Four long.
Flagman return from east or north — Five long.
Call for signals — Four short.

Back up (when standing) — Three short.
Stop at next station (when running) — Three short.
To another train: A second section is following — One long, two short.
Engineer's answer to most signals from other trains — Two short.

NOW, WE'LL LOAD SOME STEEL SCRAP!

Many large companies load and unload tons of steel and scrap by use of powerful electric magnets operated by a crane. This, too can be done on your railroad by use of the No. 583 Electromatic Crane which your American Flyer dealer has for you.

You can load steel scrap into a car or out of it by simply pressing a button.



To Wire to a Transformer Follow Wiring Diagram in Figure 32:

Connect the **YELLOW** wire to the **15 VOLT POST** on the transformer.

Connect the **LONG BLACK** wire to one of the clips underneath the Control Button.

Connect the **SHORT BLACK** wire from the other clip to the **BASE POST** on the transformer.

If You are Using a No. 14 Electronic Rectiformer:

Attach the **BLACK** and **YELLOW** wires to the two **ALTERNATING CURRENT POSTS.**

The crane is equipped with a sequence reversing switch which performs a cycle of four steps, namely: Right, Neutral, Left, Neutral. So, push the button; if crane does not move, release and push again. The crane will now move in one direction until the pressure on the button is released. To make crane move in the opposite direction, push the button twice and hold down. In operating, do not allow the crane to move more than one half revolution.

After you operate the crane once, you can place it at the proper distance from the rail to obtain the best position for picking up the load from the tray and dropping it into the car.

The hand wheel at the rear of the car raises and lowers the boom for placing magnet at proper height over load of scrap iron in tray.

NOW, WE ADD A LUMBER CAMP

Logging, lumber camps and the handling of heavy timber all enter into railroading and make it still more fascinating. This can now be added to your own railroad. By using the No. 751 Log Loader you can load logs onto the log car automatically, haul them around your layout and dump them at the sawmill or back on the log loader for reloading.

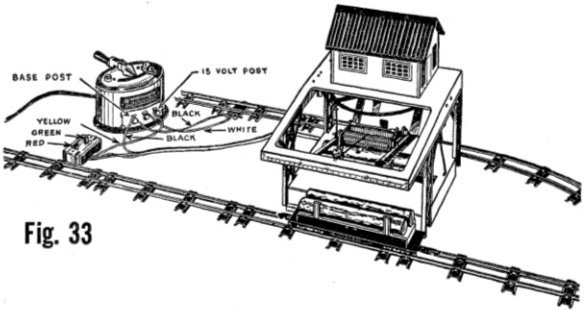


Fig. 33

To Hook up to a Transformer–see Fig. 33:

Place the Log Loader in front of a section of straight track.

Connect the **BLACK** wire of the **RAINBOW CABLE** to the **BASE POST** on the transformer.

Connect the **YELLOW** wire from the Control Box to the **15 VOLT POST** on the transformer.

Place three logs on the Log Loader platform and start operation.

Press the **GREEN** button on the Control Box and a hidden elevator lifts a log up to the jaws of the overhead conveyor.

Press the **RED** button on the Control Box and the carriage will convey the log to the end of the arms and deposit it atomatically into the empty car below, then return for a repeat operation.

A spur track can be run to the back of the Log Loader and logs can be dumped by remote control using the No. 717 Log Unloading Car.

If You Are Using a No. 14 Electronic Rectiformer:

Hook the **BLACK** and **YELLOW** wires to the two **ALTERNATING CURRENT** taps.

HOW ABOUT A COAL YARD ALONG YOUR PIKE?

As we travel about the country on our large railroads, we see many coal yards, and many types of equipment for handling coal. Amercan Flyer's No. 752 Seaboard Coaler is a towering, coal loader with a giant clam shell type bucket. By just pressing a button on the Control Box you drop this bucket onto the coal pile below with open jaws. Press another button, the

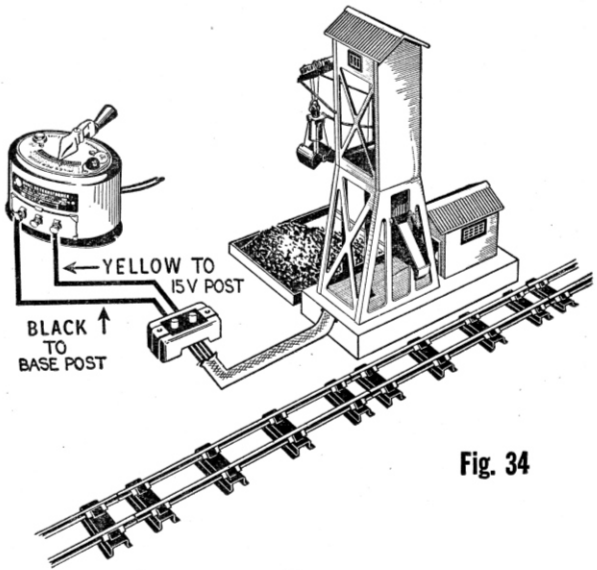


Fig. 34

jaws snap shut. The load is hoisted to the top of the tower and a moment later the coal is rattling down the chute to the waiting car below. Endless hours of fun can be had and the coal is clean, will not dirty the hands or mother's rug.

To Hook up Seaboard Coaler see Fig. 34, page 38.

If Using a Transformer:

Connect the **BLACK** wire to the **BASE POST** on the transformer.
Connect the **YELLOW** wire to the **15 VOLT POST** on the transformer.

If You Are Using a No. 14 Rectiformer:

Connect the **YELLOW** and **BLACK** wires to the two **ALTERNATING CURRENT TAPS.**

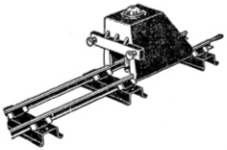
Now press the **GREEN** button, on the Control Box, and the bucket will be lowered to the coal pile.

Press the **RED** button partially down and the jaws will clamp together. Press it all the way down, and the bucket will be elevated to the tower. Release the button and the coal will fall down the chute to the car.

OILING — Bearings and gears on the motor located in the engine house can be oiled by removing the roof and through the door. A few drops of light oil is all that is necessary.

ADD A BUMPER TO THE END OF THOSE SPURS

The No. 730 Bumper is designed to snap onto the end of a spur line of track and keep cars from running off the end.



The Bumper is very easily installed: —

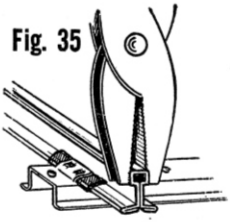
Just place it at the end of the track so the flat part which projects down from the slanted surface rests against the end tie on the track and the two contact springs go down between the rails and lock on the bottom of them.

When the Bumper is snapped in place and the transformer is turned on, the red lamp will light.

MAINTAINING THE TRACK AND RIGHT OF WAY

One of the most important and costly items in the operation of any real railroad is its maintenance. Track must be kept level with a good ballast

foundation, rail joints are kept tight, rubbish and weeds removed from the right of way, switches, blocks and all operating equipment must be in perfect working order at all times. To do this the railroads employ thousands of men to constantly check and repair every foot of trackage and all rolling stock.

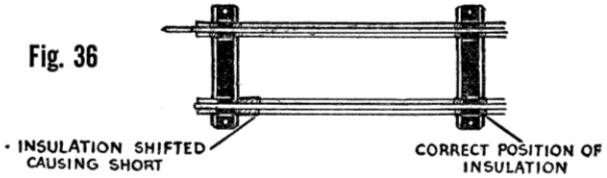


To have your train in perfect working order you must have a regular system of maintenance. It is necessary to see that the track is level and all track joints are tight. After the track has been taken apart a few times, the openings in the rails become enlarged, causing the pins to fit loosely. To insure tight connections and proper electrical contacts, reduce the rail openings by slightly pinching the rail ends with pliers as shown in Fig 35, and adjusting track pins as shown in Fig. 5.

REPAIRING SHORTS

You will find sometimes, due to rough handling or excessive use, the insulation between the rails and ties has shifted or been cut through, causing a short circuit. This can be remedied by loosening the clamp with a sharp screwdriver, and adjusting insulation to remove the short.

Position of insulation is shown in Fig. 36.



After testing your layout as described on page 12, and you find it shorted, but are unable to locate just where the trouble lies, each piece of track must be tested individually; following the same procedure, crossovers and switches can also be tested the same as track.

KEEP TRACK FREE FROM OIL

It is important to keep track clean and free of oil. Clean the running surface regularly with a fine sandpaper, then clean rails with a rag dampened with a NON-INFLAMMABLE cleaning fluid. This will insure a good electrical contact to the pick-up wheels on the tender at all times. Always make sure transformer is turned off before cleaning track with cleaning fluid.

LUBRICATION OF YOUR ROLLING STOCK

In this age of machines, everyone is familiar with the importance of proper lubrication. Every garage and gas station has complete facilities for lubrication of automobiles, and we know if the auto is not kept well lubricated, it soon will be in the scrap heap. This same thing applies to the railroads. They have their big sheds and shops where cars and locomotives are taken for regular cleaning, oiling and repairing. It is a familiar sight to see the men on the train crew with their big oil cans oiling the locomotives when they stop for a while at a station.

This train of yours, like its prototype, must be kept well lubricated at all times to insure perfect performance, long life, and to be maintained at proper operating efficiency. To do this we recommend that your locomotive and cars should be oiled every 4 hours of actual operation; also, before operating when you first get the train, and after it has been put away for any length of time.

A small drop of oil is all that is necessary. Apply oil with a toothpick or needle. Always keep in mind the fact that too much oil can be just as harmful as no oil at all, as it will run into the brush tubes and onto the commutator and cause the motor to "gum up." It will also run down onto the wheels and track resulting in a loss of traction and poor electrical pick-up.

Study Figs. 37 and 38, and using a small bottle of high grade fine oil (Sewing Machine Oil) and some vaseline, proceed as follows:

Oil the car axles and the Locomotive at the following points:

1. The rear motor bearing wick reached through the rear of the locomotive cab. See Fig. 37. (Be careful not to get oil in the brush tubes.)

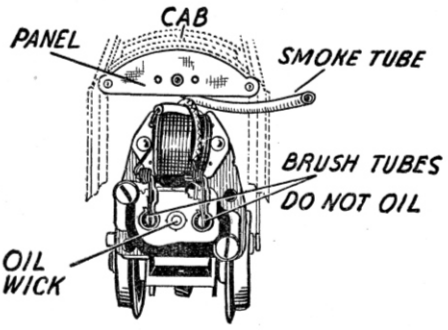


Fig. 37

2. Turn the locomotive on its back. Back of the rear axle is a steel cover plate that can be removed by unfastening one screw. This exposes a drive gear which should be lubricated with a small amount of vaseline. The cover plate should be replaced to keep dust and dirt out of gears.

3. Oil the wheel bearings, the side rod bearings and the valve rod linkages. See Fig. 38.

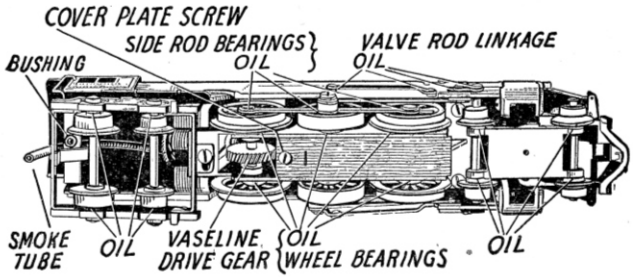


Fig. 38

After oiling, run train around track a few times and then wipe the rails to remove any oil that might have run down on them. This not only keeps the rails bright and shiny, but provides a good electrical contact and prevents the drive wheels from skidding.

HOW TO OPERATE AND MAINTAIN YOUR CHOO-CHOO AND SMOKE UNIT

When the word "locomotive" is mentioned, the mental picture which most of us visualize contains not only the locomotive, but the puffs of smoke belching from its stack, and the roaring "choo-choo" sound it makes. To make your train even more realistic, American Flyer has added smoke and choo-choo sounds to some of its trains.

There are two different types of smoke and choo-choo units used in American Flyer trains, one is a motor driven bellows located in the tender which forces the smoke through a tube and out of the stack. See Fig. 39. The other is a gear driven piston located in the front part of the locomotive boiler and forces the smoke directly out of the stack. See Fig. 39-A. The latter type locomotive has the Remote Control reversing unit located in the tender and has four wires leading from the tender into the locomotive.

To Refill Smoke Unit in Tender

When the smoke diminishes and a refill is needed, unscrew the small cap on the top near the front of the tender. Then cut off the end of the nozzle on a Smoke Cartridge Tube and squeeze the liquid into the hole and replace cap.

Be sure to use only the No. 25 Smoke Cartridge which is designed to be used with this unit.

Lubrication of Smoke Unit in Tender

If your Smoke and "Choo-Choo" Unit becomes noisy or sluggish and needs lubrication — disconnect the tender from the locomotive by removing

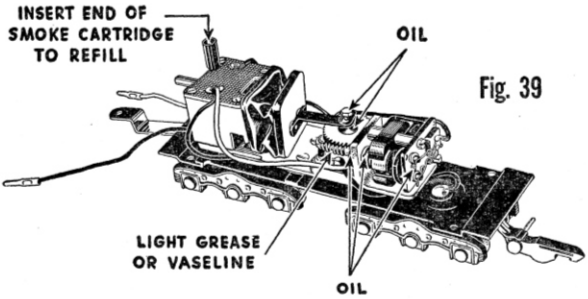


Fig. 39

the coupler strap screw — pull the two plugs from the panel in back of the locomotive and disconnect the rubber smoke hose from the tender.

The smoke hose which leads to the smoke stack slips over the brass tube at the front of the tender.

Turn the tender on its back and remove the 4 mounting screws. (There is one in each corner.) — Place tender upright again and remove the refill cap. Now lift the body of the tender off the chassis. Place a few drops of oil on the gear stud, a little vaseline or fine grease on the worm itself. See Fig. 39.

Apply a little oil with a toothpick to the front and rear bearings in which the armature shaft turns. Be careful not to get an excess of oil on the small bearing so as to have it run onto the brushes and commutator. Now reassemble the tender and connect it to the locomotive.

If the Smoke and "Choo-Choo" Unit functions and no smoke puffs from the stack, and you know there is smoke fuel in the chamber, it is possible that oil has run into the tube and blocked it.

This can be remedied by removing the tube from the tender and allowing the tube to drain or by first shutting off the motor and blowing through the stack.

To Refill Smoke Unit in Locomotive Boiler

If you have a locomotive with the Smoke and "Choo-Choo" Unit located in the boiler and it needs a refill, cut off the end of the nozzle on a Smoke Cartridge and squeeze the liquid into the smoke stack.

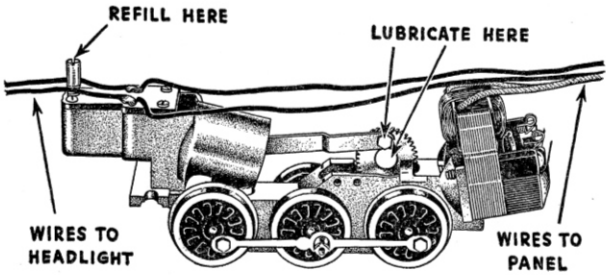


Fig. 39A

Testing The Locomotive

If a locomotive refuses to run, first see that current is being supplied to the track. After checking the track for shorts as described on page 12, and it is o.k., be sure all connections from transformer to track are correct and firmly fastened. See that all track pins are firmly inserted into the track openings. Turn the transformer on and hold a screwdriver blade on the outer rail and lightly touch the end of the screwdriver to the other rail. If there is current in the track, a small spark will be seen.

If the spark is evident at the rails, be sure all wheeels are in place on the rails. The locomotive will not run without the tender as the current for the locomotive is picked up by alternate metal wheels on the tender. Be sure the metal wheels on the front truck are on one rail and those on the rear truck are on the other rail. The two plugs on the ends of the wires protruding from the front of the tender are inserted into the two socket holes in the panel on the rear of the locomotive. In the event these plugs are disconnected, either plug can be inserted in either hole.

If power is being picked up by your locomotive, the headlight will light. Considering that this is the case and still your locomotive will not run, turn your transformer lever off then on several times to actuate the control on a Standard Remote Control locomotive.

If you have an Electronic Propulsion locomotive throw the direction switch back and forth.

Check the various piston and valve rods to see they are not bent and binding

Look for loose or broken connections in the locomotive. Examine the brushes to see that they are not worn out and that they make good contact with the commutator.

If the wheels move, but slowly and a higher voltage than is customary is required, simply cleaning and lubricating the motor may be all that is necessary.

The commutator is the flat copper surface on the armature, on which the brushes make contact. If it is dirty, it will also tend to slow down the motor and will cause the brushes to wear out faster.

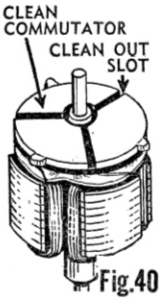


Fig.40

To Clean the Commutator (Fig. 40) — Remove the rear locomotive truck, fasten the two wires from the transformer to the two metal truck frames on the tender, start locomotive running, turn it on its back and press a piece of fine sandpaper ("00" or finer) against the commutator. Press lightly until the whole surface of the commutator is smooth and bright. Then stop the motor and with a pointed tool such as a needle, clean out the slots between the segments of the commutator. It is essential that the copper dust from worn brushes or commutator be thoroughly cleaned from the slots between the segments.

LAMP DATA

Have A Few Extras On Hand

Replacement of Lamps

STEAM TYPE LOCOMOTIVES —

Remove the boiler front, which is held in by spring clips, and unscrew the bulb.

CARS —

With thumb and first finger on the two wings at the edge of the lamp bracket, in the chassis, turn ¼ turn counter clockwise, remove bracket and unscrew bulb.

FLOODLIGHT CAR —

Remove snap ring and glass and unscrew bulb.

ACCESSORIES — BLINKER AND BLOCK SIGNAL —

Remove screws in base and lift off top of signal. Slip lamp bracket off base.

TRACK SWITCHES —

Remove screws from lamp housing, lift off color shutter and unscrew bulb.

Lamps are Used as Follows:

	No.	Volts	Glass	Color	Diam.	Lamps in Package
No. 440 — All locomotives, cars and equipment except Nos. 579 & 580 Lamp Posts	440	14	Round	Clear	7/16	3
No. 441 — Where Red Globes are required	441	18	Round	Red	9/16	3
No. 443 — Where Green Globes are required	443	18	Round	Green	9/16	3
No. 451 — For No. 579 and No. 580 Street Lights	451	14	Round	Frosted	5/8	1
No. 452 — For No. 588 Semaphore	452	18	Min. Round	Clear	5/16	1
No. 453 — For No. 720 Switches and can be used in place of No. 440 in locomotives, cars and equipment	453	18	Round	Clear	7/16	3

IMPORTANT THINGS TO REMEMBER

DO — Read carefully the instruction sheets packed with each train and item of equipment.

DO — Oil locomotive and equipment bearings frequently.

DO — Wipe the tracks regularly with a non-inflammable cleaning fluid and fine sandpaper.

DO — Clean wheel rims and tires regularly with rag and cleaning fluid.

DO — Make sure track layout is level.

DO — Run additional wires or feeders from the Base and 7-15 Volt Posts of the transformer to a point in the track farthest from the transformer in large layouts, to prevent trains from slowing down.

DO — Attach the track terminal in a section which will not become dead if between two Remote Control Switches.

DO — Set the Remote Control Switches for "Regular Operation" unless a dead siding is desired.

DO — Remove the transformer plug from outlet when through operating your train.

DO — Make sure you have proper electrical current before plugging in transformer.

DO — Use No. 14 Electronic Rectiformer with Electronic Propulsion locomotives.

DO — Make sure all wire connections are clean and tight.

DO — Make sure any article which is being returned for repair is well packed and correctly addressed, and a letter of explanation accompanies it and a return address is inside as well as on the outside of the package.

KEEP THESE TIPS IN MIND

DON'T — Over oil your locomotive.

DON'T — Put oil on commutator.

DON'T — Put oil on the brushes.

DON'T — Get sand or dirt into the locomotive.

DON'T — Store the train or equipment in damp places.

DON'T — Get water on the train or tracks.

DON'T — Step on the track.

DON'T — Bend or distort the track.

DON'T — Drop pieces of metal or Christmas tree tinsel across the tracks, as it causes shorts.

DON'T — Place locomotive or cars on the track while current is turned on.

DON'T — Run trains at full speed around the curves.

DON'T — Use a transformer of less wattage than recommended in the catalog.

DON'T — Attempt to use 110 volt current without the transformer.

DON'T — Plug transformer or Rectiformer into Direct Current or any current not specified on the item.

DON'T — Connect equipment or lamp to a higher voltage than recommended.

DON'T — Clean track with transformer turned on.

DON'T — Try to operate Electronic Propulsion locomotives with a transformer.

DON'T — Use anything but No. 25 Smoke Cartridges to refill your smoke unit.

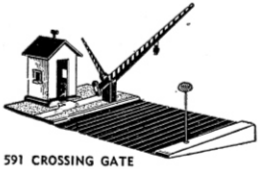
American Flyer Equipment to make your railroad realistic

751 SEABOARD COAL LOADER

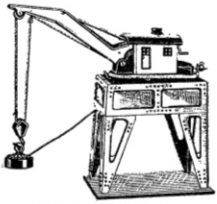
752 LOG LOADER

589 RAILROAD STATION

750 TRESTLE BRIDGE



591 CROSSING GATE



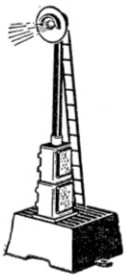
583 ELECTROMATIC CRANE

730 BUMPER

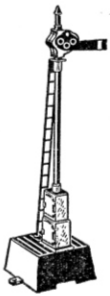
577 BILLBOARD WHISTLE

596 WATER TANK

582 BLINKER SIGNAL



587 BLOCK SIGNAL



588 SEMAPHORE