

The Hornby Control System

SIGNALS, POINTS, AND TRAINS CONTROLLED FROM THE SIGNAL CABIN

The remarkable development of Hornby Trains probably represents a feat of model engineering that has not been equalled since the invention of Meccano twenty-five years ago. From the day of their introduction, Hornby Trains have always represented the latest model railway practice, and their popularity has grown to such an extent that their name has become a household word. And now another new Hornby "thrill"—the Hornby Control System! Every model railway enthusiast can now arrange his layout so that he may control his clockwork trains, signals, and points by operating a set of levers in a convenient signal cabin. The following article, which will be concluded next month, describes the various components of the Hornby Control System in detail, and contains full instructions for the installation and operation of the System.

THERE is a certain amount of fascination about even the cheapest and simplest Miniature Railway.

For a time we can take a keen interest in a single train running round a plain oval track, but presently we realise that we need something more. Then we add points and crossings and so make possible layouts with branch lines and sidings. Still later, perhaps, we add further interest by introducing a more or less complete system of signals.

By this time our railway has become a source of keen enjoyment to us and to our friends, and for a while we feel that nothing more is needed. Sooner or later, however, our thoughts turn to the Signal Cabin on a real railway and we wish that, like the signalman, we could control the operation of our railway by means of levers that enable us to manipulate signals and points.

The new Hornby Control System has been specially devised to enable this desire to be fulfilled.

Two Different Outfits

The Control System is easy to instal on our Hornby Railway and once it is in operation we are in the position of the signalman whom we previously envied. Instead of being obliged to manipulate individually the points and signals situated at various positions along the track, we are able to control them from one central point, namely, the Signal Cabin. Our railway thus makes a tremendous advance in realism and the possibilities of fun that it now affords are unlimited.

An important feature of the System exists in the fact that any layout in which it is incorporated may easily be dismantled or reassembled.

The special component parts comprised in the Hornby Control System are made up in two

different Outfits. The No. 1 Outfit is for use with rails of 1 ft. radius and is intended for operation with "M" series, No. 0 and No. 1 locos and rolling stock. The

No. 2 Control Outfit is designed for rails of 2 ft. radius, and is intended for use with the new type of No. 2 locos and the Metropolitan clockwork and the "Blue" Train clockwork locos, which

have been adapted specially for the purpose. The addition of one of these Control Outfits to a Hornby Train Set increases enormously the amount of fun and interest that can be obtained.

Taking the No. 1 Control Outfit first, we have as its most important feature a Lever Frame provided with six Levers (Fig. A). This frame is specially designed to fit the Hornby Signal Cabin, the roof and sides of which open to permit of easy access to the levers. The cabin is secured to the base of the Lever Frame by means of four nuts and bolts, and the realistic appearance of the

complete unit will be appreciated from Fig. C. The hinged back of the cabin has been lowered in this illustration.

Operations Controlled from Signal Cabin

The Lever Frame forms the central point controlling the operation of the whole system, and its position depends upon the nature of the layout. The best fun is to be obtained of course by placing the frame alongside a station as in real railway practice. It is then a simple matter to carry out a variety of operations in a most fascinating manner. By manipulating the various levers we can control the signals giving right of entry to or exit from the station. Also we are able to operate two sets of points and thus transfer any train from the main line to a branch line or siding, or *vice versa*, just whenever we choose.

All these operations are controlled entirely from the Signal

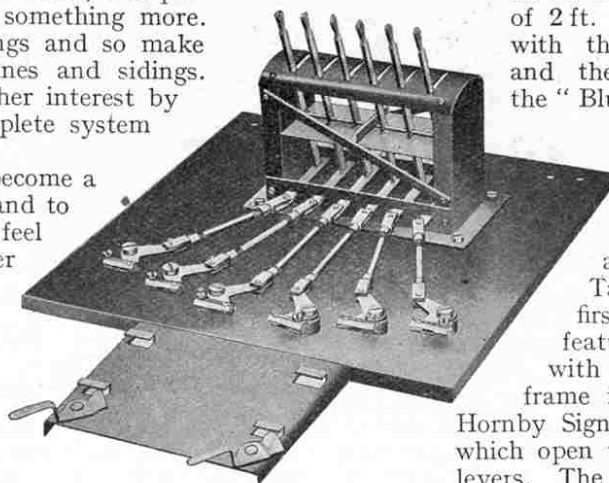


Fig. A. The Lever Frame

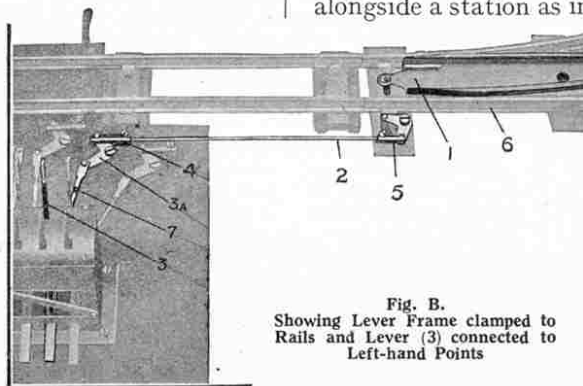


Fig. B.
Showing Lever Frame clamped to
Rails and Lever (3) connected to
Left-hand Points

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(Concluded from last month).

SO long as the Points or Signals to be operated are quite close to the Lever Frame, as in Fig. F, the wire Rodding is held in the correct position by the couplings gripping it at each end. When the length of Rodding is increased, however, Guide Brackets become necessary. Fig. G shows one of these Guide Brackets in position carrying the Rodding.

The improved Hornby Rails have two holes pierced in the sleepers as shown in Fig. G, whereas there is only one hole in the sleepers previously manufactured. The Guide Brackets are therefore pierced with three holes so that they may be attached either to the old or the new type rails.

It will be observed from the illustration that there are five smaller holes in the projecting portions of the Brackets. Any number of separate lengths of Wire Rodding up to five may therefore be carried side by side along a single stretch of Hornby Track, each length being passed through separate holes in the Brackets.

Rodding Compensators

Signals operated to the right of the Lever Frame are attached in a similar manner to the Points illustrated in Fig. D (see December "M.M.") When they are fixed to the left of the Lever Frame, however, a Rodding Compensator, Fig. F (3), is required to convert the thrust of the rod (1) into a pull of the rod (2). The method of attaching the compensators is clearly shown in the illustration.

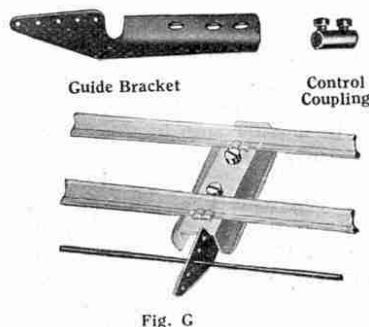


Fig. G

Brake and Reverse Rail

The Brake and Reverse Rail, Fig. H, plays a very important part in the Control System. By means of it the "M" series, No. 0 and No. 1 Locos may be braked and brought to a standstill. It should be remembered that the "M" series and No. 0

locos are not fitted with reversing gear and the No. 1 locos are reversible only from the cab.

As we have already explained, in order to stop the "M" series, No. 0 and No. 1 Locos, the projection (1) must be placed in the central position.

After any of the above locos have been stopped by means of the Brake and Reverse Rail, they are started again by the brake lever in the cab.

Control Rail and its Functions

The Control Rail is shown in position on the track at (1) Fig. J. This rail is intended to be operated only with the newly-designed mechanism of the Special No. 2 Loco and the Metropolitan Clockwork and "Blue" Train Clockwork Locos.

The special importance of the Control Rail is that it enables both starting and stopping to be carried out automatically.

The ability to re-start a train from the Signal Cabin without touching either the loco or the track adds very greatly to the possibilities of traffic control and indeed permits the carrying-out of many extremely interesting operations that would be impossible in the ordinary way.

In addition, the Control Rail enables us to reverse these special locos and thus gives complete automatic control of the train from the Signal Cabin. Owners of the ordinary No. 2 type of loco may use the Control Rail for braking or reversing, but after braking this loco cannot be started automatically, but must be re-started by operat-

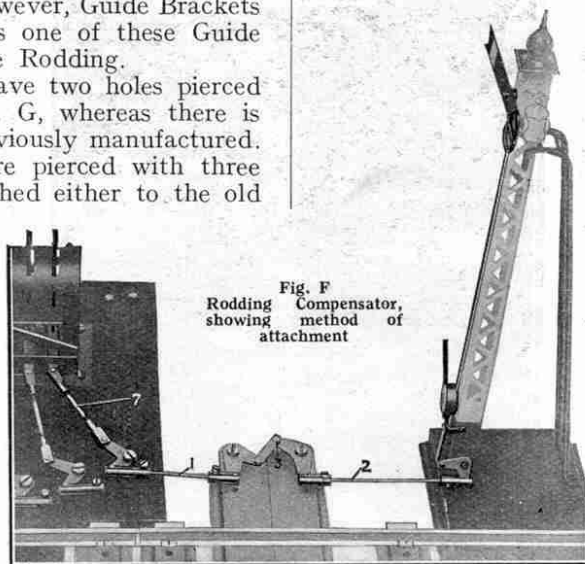


Fig. F
Rodding
showing
method of
attachment

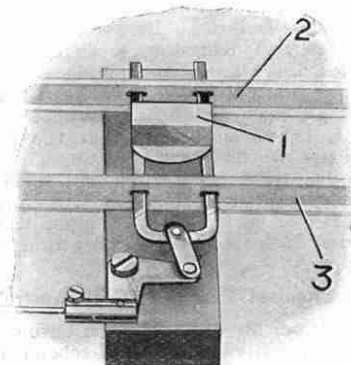


Fig. H

Components of the Hornby Control System

By "Tommy Dodd"

FOLLOWING our talk last month on the Signal Cabins of the Hornby Series, it is a natural step to deal now with the actual operation from the Cabin of signals and points, by means of the Hornby Control System. The desire to be able to imitate the work of the real signalmen makes itself felt as soon as a layout has developed sufficiently to include a more or less complete system of signals. This desire can be realized by the installation of the Hornby Control System, which was successfully introduced some years ago, and has been greatly improved by modifications and additions that have been made this season. A review of the principal components and their functions will therefore be useful to Hornby Railway owners and of interest to readers generally.

The first and most important item in the Control System is the Lever Frame, by means of which points and signals may be operated from the Cabin. Three sizes of Frame are now available, having two, four and six levers respectively. This choice is a great convenience, for in certain places the Six-Lever Frame may be too large, and in others some additions to the number of points or signals already controlled by the large Frame may make the employment of an extra Frame desirable. Instances of this may occur when a terminal station is being enlarged, or a few extra sidings are being laid down. In such cases the separate additional Lever Frame is an advantage, for the levers governing the particular platform roads or sidings involved are thus concentrated near to the points or signals controlled. Separate cabins for such purposes are frequently seen in actual practice, though sometimes only a "ground frame" with no cabin is used.

The Lever Frame is strongly made to withstand the wear and tear to which it is subjected, for the out-of-scale human hand applies far more force in pulling the levers than a miniature signalman would do. The general construction of the Six-Lever Frame is shown in the upper illustration on page 919. The levers are connected at their lower ends to the bell cranks situated on the large base upon which the Frame and Cabin are mounted. To make the whole assembly secure, provision is made to attach this base to the track. A projection fitted to the front of the base passes underneath the rails like a large sleeper, and pivoted clamps enable a rigid attachment to be made. When the Signal Cabin is placed over this assembly the whole appearance is very realistic. The handling of the levers is quite easy owing to the special hinged roof and back of the Cabin, described last month.

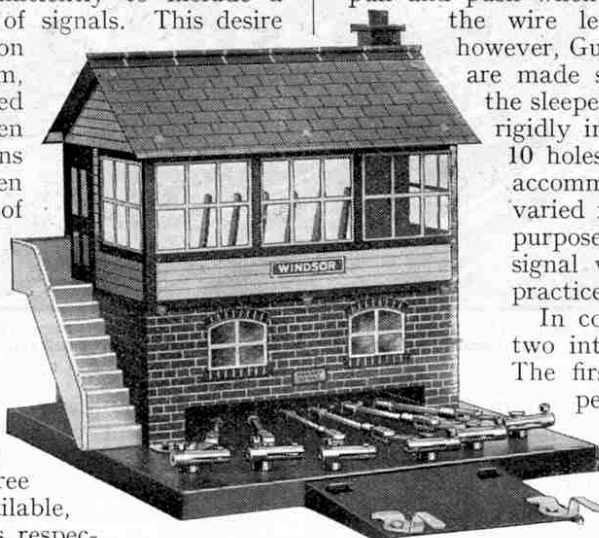
When the Frame has been attached to the rails in a suitable position, the wiring up of signals or points is an easy matter, and is dealt with fully in the special leaflet dealing with the Hornby Control System. If the signals or points controlled are close to the frame, the wire is stiff enough to stand up to the alternate pull and push when a lever is operated. To support the wire leading to signals at a distance, however, Guide Brackets are necessary. These are made so that they may be attached to the sleepers of the track, and are thus held rigidly in position. They are pierced with 10 holes, so that several wires may be accommodated at once, and their positions varied if required. They fulfil the same purpose as the points rod guides and signal wire posts used in actual railway practice.

In connection with wiring-up there are two interesting mechanisms to be noted. The first of these is the Rodding Compensator, the function of which is to enable a pull given to a signal or points wire to be changed into a push, or vice versa. The necessity for this is dependent upon the position of the signals or points relative to the Lever Frame, and also the way in which either happens to be facing. The device consists essentially of two special cranks, connected by a link and pivoted on a base plate that is made to clamp to the rails. A fine range of positions is given for these cranks, for the sleeper pattern base plate has five possible holes for each crank to be mounted in. Similar devices are in use in actual practice, and a keen observer will see many of them alongside the line where the point rodding runs.

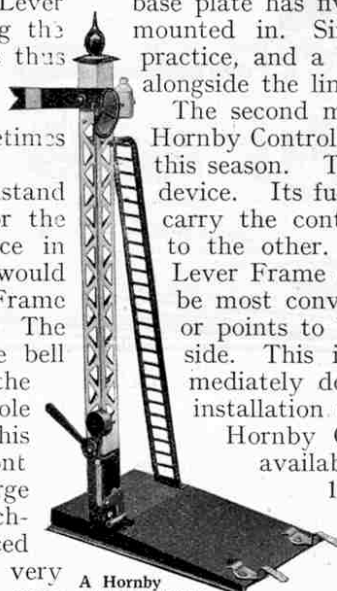
The second mechanism is the latest feature of the Hornby Control System, and has only been introduced this season. This is known as the Rodding Traverse device. Its function, as suggested by its name, is to carry the control wire from one side of the track to the other. It therefore allows us to have the Lever Frame on the side of the track where it may be most convenient for handling, while the signals or points to be controlled may be on the opposite side. This is a very valuable feature, and immediately doubles the possibilities offered by the installation of the System.

Hornby Control System components are now available in three different assortments, No. 1, No. 2 and No. 3. These contain a

Two, a Four and a Six-Lever Frame respectively, and a corresponding number of Control-fitted points, signals and accessories. Assortment No. 1 contains the Two-Lever Frame, and two Points are provided. The



The Hornby No. 2 Signal Cabin with the Six-Lever Frame installed. These components are mounted on a large base which is attached to the rails by the clamps shown.



A Hornby "Distant" Signal fitted for Control Working. The bell crank and coupling at the base of the post enable connection to be effected with the Lever Frame.

use of these will allow a loop line to be added to a layout in the manner described in the Junior Section pages recently, and yet there is no need for the operator to be at either end of the loop to admit a train into it or to allow it to pass on to the main line. The Lever Frame may be placed at the centre of this loop, each lever controlling one of the Points. Thus without having to take a single step, or even to lean over the railway in an awkward manner, the operator may divert the train into a loop line by means of the facing points, and equally easily let it pass out.

Further possibilities are afforded to the owner of Assortment No. 2. Two Points are provided as before but in addition there are two Signals also. To provide the necessary control for this the Four-Lever Frame is included. The points may be used as before if desired, but we are now able to add signals to the layout and to operate them from a distance. It is usual to include one "home" Signal and one "distant" Signal, but two of either kind may be obtained if specially required. A Rodding Traverse is included in this Assortment, so that one of the signals may be placed on the opposite side of the line, as will be necessary if the signals are to be used for trains in opposite directions.

Assortment No. 3 is more elaborate altogether. The largest or Six-Lever Frame is provided, and there are two Points, two single Signals and a Junction Signal fitted for control. With this outfit the loop may be laid as before, the entrance to it being governed in the correct manner by the Junction Signal, the use of which before the Points indicates the choice of roads that is possible. The "distant" Signal may be installed a suitable distance before the Junction Signal, while the "home" Signal may be used at the other end of the loop. Considerable work thus devolves upon the signalman, but as it is not necessary for him to move from his position his control is made much easier than if the Signals and Points were separately hand-operated.

All the Control components contained in the three Assortments may also be obtained separately.

Now let us see how the Control System works in actual practice. Let us assume that it is decided to install on a single line railway a The "M" Series Wayside may well be used for this purpose, as it is representative of the small "platform" halting places that are found in remote or thinly-peopled districts. The next step will be to provide a small dead-end siding for goods traffic, and the appropriate signals.

A Four-Lever Frame will probably be necessary, and Points for the siding. "Home" signals for both directions, and the "home starter" for the siding, will employ the Four-Lever Frame to capacity. If the equipment

generally is on a simpler scale and no siding is required, the station being merely a "conditional" halt, a "home" signal for each direction will be sufficient, the signals being used to indicate whether the train is required to stop or not. In this case the Two-Lever Frame arranged as a "ground-frame" without a cabin may be used. This is the simplest possible equipment, yet it provides a distinct thrill to be able to control the two signals from the one place.

The Six-Lever Frame is specially useful where there is only one operator, for the ability to control from one place as many as six signals and points is a great advantage. The points leading to a siding may be some distance beyond the station where the Lever Frame and Cabin are installed, yet their operation, and that of the signal governing the exit of the train from the siding, will be quite certain and smooth. Many single line continuous miniature railways are

operated in one direction only, chiefly for convenience in winding the engine facing one way. The signals of a typical station would be the "distant," the "home," and the "starter." The Signal Cabin might then be placed between the "starter" and the trailing points of the siding. Beyond the points would be the "advanced starter," by which trains requiring to stop before backing into the siding are halted; and in the siding would be the "home" signal controlling the exit of trains from the siding. Complete control of all these would be afforded from

the Six-Lever Frame, the Rodding Traverse allowing the siding signal to be reached across the main line.

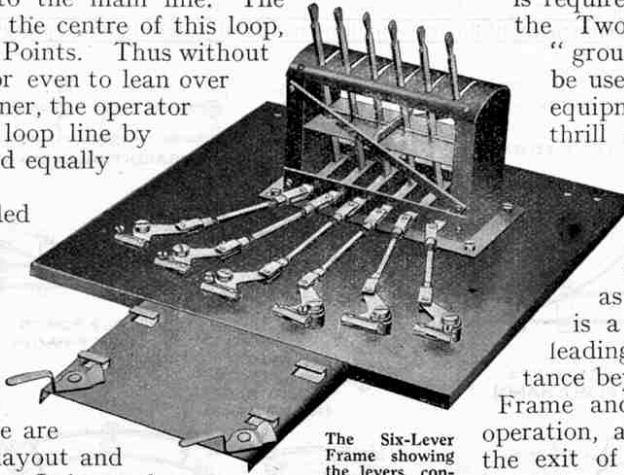
A large terminus or junction station requires fairly extensive equipment owing to the large number of points and signals usually found in such situations. Probably two Six-Lever Frames will be necessary, the signals and points controlled being divided between them in the most convenient manner for wiring up and operation.

This dual control may be considered awkward, but there are usually more than one operator on a layout on which a really large station is installed, and the Frames therefore may be placed on opposite sides of the line if more convenient. In this way up and down traffic may be controlled separately, but it will be necessary to take care that conflicting movements are not signalled by the operators. Various plans to ensure safe working may be adopted and several track-circuit and lamp indication devices suitable for this purpose have been described in the "M.M."

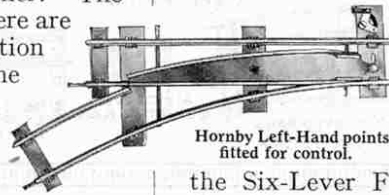
When the Control System is first installed it may be found that the parts are somewhat stiff in operation. This is only due to the new condition of the various

components. Like all mechanical devices, they become "worked in" after a period of service, and this process may

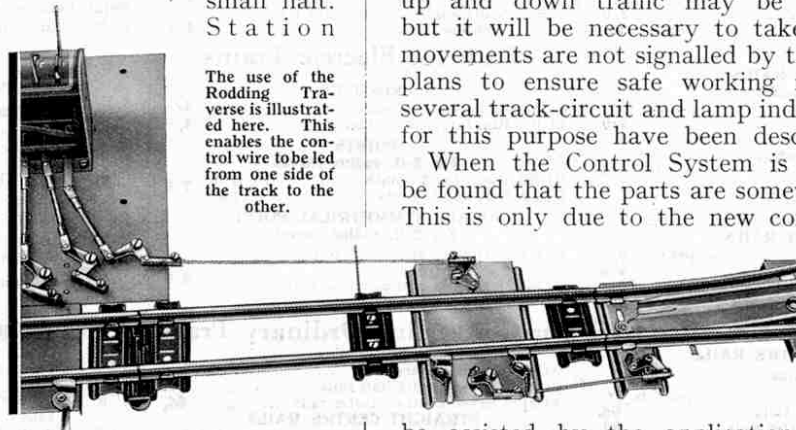
be assisted by the application of a little Meccano Lubricating Oil in order to make the various levers and cranks work smoothly and easily.



The Six-Lever Frame showing the levers, connecting rods and bell cranks.



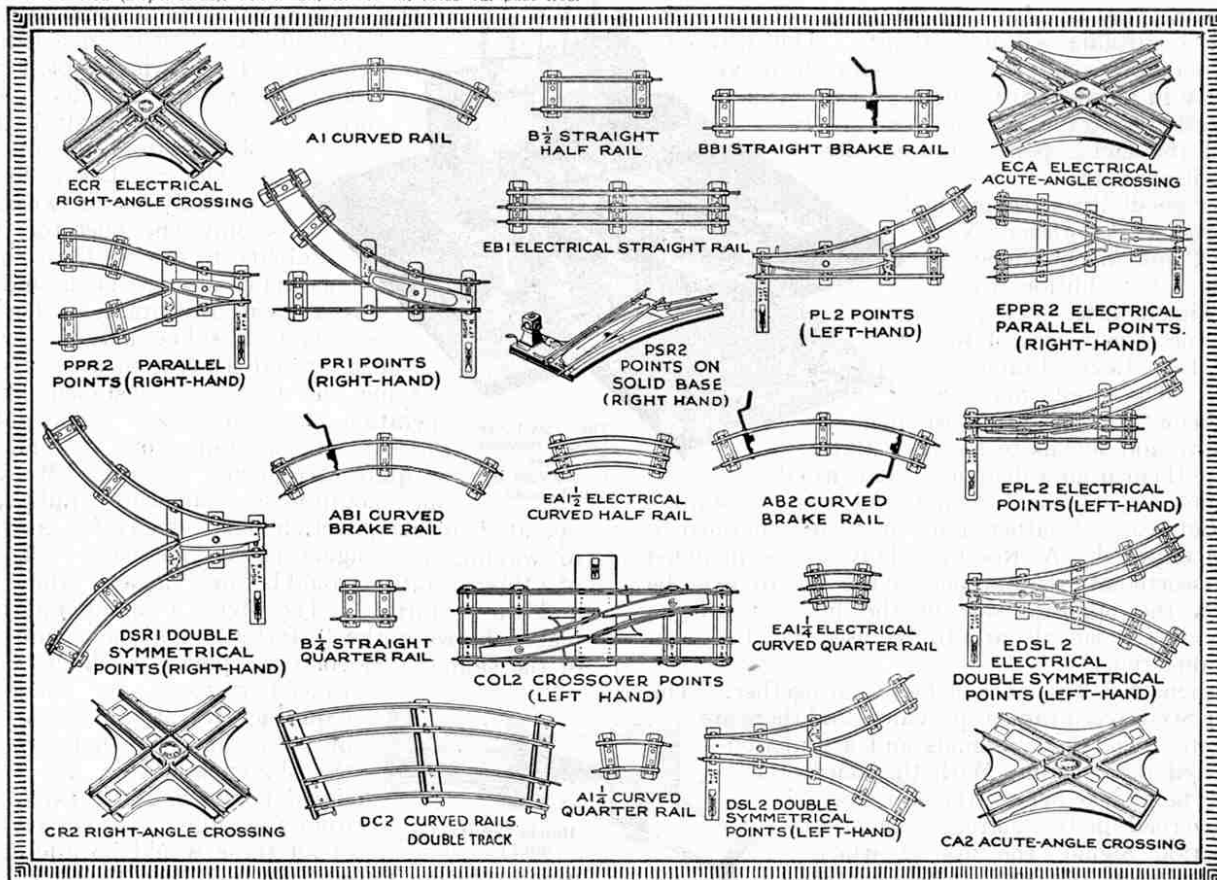
Hornby Left-Hand points fitted for control.



The use of the Rodding Traverse is illustrated here. This enables the control wire to be led from one side of the track to the other.

Hornby Series -- Rails, Points and Crossings -- Hornby Series

Hornby Rails, Points and Crossings are designed to meet the most exacting requirements of model railway enthusiasts. The variety of Points, left-hand and right-hand turnout, together with the Crossings, make possible an almost endless number of realistic and railway-like layouts. The adaptability of the Rails, Points and Crossings is well shown in a special booklet "How to Plan your Hornby Railway," which is obtainable from your dealer, price 3d., or from Meccano Limited (Dept. A.B.), Old Swan, Liverpool, price 4d. post free.



Alternate Pegs

CURVED RAILS			
9-in. radius (For MO Trains)			
M9	Curved rails	...	doz. 3/-
MB9	Curved brake rails	...	each 3 1/4d.
1-ft. radius			
A1	Curved rails	...	per doz. 4/6
A1 1/2	Curved half rails	...	" 3/6
A1 1/4	Curved quarter rails	...	" 3/-
AB1	Curved brake rails	...	each 6d.
2-ft. radius			
A2	Curved rails	...	per doz. 4/6
A2 1/2	Curved half rails	...	" 3/6
A2 1/4	Curved quarter rails	...	" 3/-
AB2	Curved brake rails	...	each 6d.
DC2	Curved rails, double track	...	1/2 doz. 7/6
STRAIGHT RAILS			
BM	Straight rails (for MO Trains)	...	per doz. 2/9
B1	Straight rails	...	" 4/-
B1 1/2	Straight half rails	...	" 3/-
B1 1/4	Straight quarter rails	...	" 2/6
BB1	Straight brake rails	...	each 5d.

CURVED RAILS			
1-ft. radius			
EA1	Curved rails	...	per doz. 6/6
EA1 1/2	Curved half rails	...	" 4/6
EA1 1/4	Curved quarter rails	...	" 4/-
2-ft. radius			
EA2	Curved rails	...	per doz. 6/6
EA2 1/2	Curved half rails	...	" 4/6
EA2 1/4	Curved quarter rails	...	" 4/-
EDC2	Curved rails, double track	...	1/2 doz. 9/-
STRAIGHT RAILS			
EB1	Straight rails	...	per doz. 6/-
EB1 1/2	Straight half rails	...	" 4/6
EB1 1/4	Straight quarter rails	...	" 4/-
EDS1	Straight rails, double track	...	1/2 doz. 8/6

CURVED CENTRE RAILS			
1-ft. radius			
AC1	Curved centre rails	...	per doz. 1/-
AC1 1/2	Curved centre half rails	...	" 9d.
AC1 1/4	Curved centre quarter rails	...	" 6d.

Rails for Clockwork and Steam Trains

BBR1	Straight brake and reverse rails	each	1/6
DS1	Straight rails, double track	1 doz.	6/6
DOUBLE SYMMETRICAL POINTS			
For 1-ft. radius curves			
DSR1	Double symmetrical points, right-hand	} per pair	5/-
DSL1	Double symmetrical points, left-hand		
For 2-ft. radius curves			
DSR2	Double symmetrical points, right-hand	} per pair	5/-
DSL2	Double symmetrical points, left-hand		
PARALLEL POINTS			
PPR2	Parallel points, right-hand	} per pair	5/-
PPL2	Parallel points, left-hand		
CROSSINGS			
CA1	Acute-angle crossings (for 1-ft. radius tracks)	each	2/-
CA2	Acute-angle crossings (for 2-ft. radius tracks)	"	1/9

Rails for Electric Trains

CROSSINGS			
6/6	ECA	Acute-angle crossings	... each 4/-
6/6	ECR	Right-angle crossings	... " 4/-
POINTS			
For 2-ft. radius curves			
6/6	EPR2	Right-hand points	... } per pair 7/6
6/6	EPL2	Left-hand points	... }
DOUBLE SYMMETRICAL POINTS			
For 2-ft. radius curves			
6/6	EDSR2	Double symmetrical points, right-hand	} per pair 8/6
6/6	EDSL2	Double symmetrical points, left-hand	

Centre Rails for Converting Ordinary Track to Electrical

CURVED CENTRE RAILS		
2-ft. radius		
AC2	Curved centre rails	per doz. 1/-
AC2 1/2	Curved centre half rails	" 9d.
AC2 1/4	Curved centre quarter rails	" 6d.
STRAIGHT CENTRE RAILS		
BC1	Straight centre rails	per doz. 1/-

Gauge 0, 1 1/4"

CR1	Right-angle crossings (for 1-ft. radius tracks)	each	2/-
CR2	Right-angle crossings (for 2-ft. radius tracks)	"	1/9
CROSSOVER POINTS			
COR2	Crossover points, right-hand	}	per pair 12/-
COL2	Crossover points, left-hand		
POINTS			
9-in. radius (For MO Trains)			
MR9	Right-hand points	}	per pair 3/-
ML9	Left-hand points		
1-ft. radius			
PR1	Right-hand points	}	per pair 4/-
PL1	Left-hand points		
2-ft. radius			
PR2	Right-hand points	}	per pair 4/-
PL2	Left-hand points		
PSR2	Points on solid base, right-hand	}	per pair 8/6
PSL2	Points on solid base, left-hand		
RCP	Rail connecting plates	1/2 doz.	2d.

PARALLEL POINTS			
For 2-ft. radius curves			
EPPR2	Parallel points, right-hand...	} per pair	8/6
EPPL2	Parallel points, left-hand ...		
CROSSOVER POINTS			
ECOR2	Crossover points, right-hand	} per pair	24/-
ECOL2	Crossover points, left-hand		
TCPL	Terminal connecting plates (low voltage) ...	each	1/6
<i>Electrical Points for 1-ft. radius curves are not supplied.</i>			

Electrical Points for 1-ft. radius curves are not supplied.

BC1	Straight centre half rails	per doz. 9d.
BC1 1/2	Straight centre quarter rails	" 6d.
ICR	Insulators for insulating centre rails	per doz. 3d.
CCR	Clips for fixing centre rails	" 6d.

Manufactured by MECCANO LIMITED, OLD SWAN, LIVERPOOL

Cabin without any necessity to touch the signals or points at all.

Locos Controlled Automatically

The interest and excitement are increased still further by the use of the Brake and Reverse Rail, included in the Outfit. This rail enables us, by operating the particular lever in the cabin, to stop "M" series, No. 0 and No. 1 Locos, or allow them to go through, at will, according to whether the signal ahead is at "Danger" or "All right." The above-mentioned locos are stopped by placing the lever so that the brake projection is in a central position midway between the rails, and in order to start them again it is necessary to move the projection to one side or the other and manipulate the brake lever in the cab of the loco.

The remaining contents of the No. 1 Control Outfit consist of two special Control Signals, two Control Points, two Rodding Compensators, Wire, Guide Brackets, and other accessories.

With one important exception the No. 2 Control Outfit contains the same components as the No. 1, but the points are of 2 ft. radius. The exception referred to is the substitution of a Control Rail for the Brake and Reverse Rail of the No. 1 Outfit. This Control Rail has been designed for use with the improved mechanism of the special No. 2 Loco and the Metropolitan Clockwork and "Blue" Train Clockwork Locos, and it places in our hands an entirely new power. By means of it we are able to reverse the loco, and not only to stop it whenever we wish but also to start it again automatically without touching either the track or the lever in the loco cab. The Control Rail may be used for braking or reversing the ordinary No. 2 Loco, but after braking, this loco cannot be started automatically but must be re-started by the brake lever in the cab.

The Control Rail adds remarkable realism to station operations and it completes our control of the whole layout.

Installing the Control System

We now come to the actual installation of the Hornby Control System.

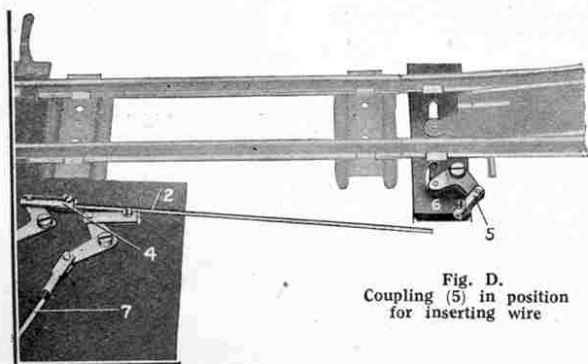


Fig. D.
Coupling (5) in position
for inserting wire

When a layout has been decided upon, the Lever Frame is clamped to the rails at a convenient point, as shown in Fig. B, by means of the clamping levers and small lugs in the front portion of the base (Fig. A). This frame now becomes the central control point of the layout and it should be housed in a Hornby Signal Cabin.

In Fig. B. we show Left-hand Points (1) connected by a Rod (2) to a Coupling (4) on the Lever Frame. In this illustration the points are shown close to the Lever Frame. This has been done solely for convenience of illustration, however, and the principle of attachment will be the same wherever the points are fixed. It should be noted that this applies to Left-hand Points operated on the right of the Lever Frame, or to Right-hand Points operated on the left of the Frame.

Attaching the Wire Rodding

In order to attach the wire Rodding, a piece of wire is cut long enough to be connected by the Couplings (4) and (5) Fig. B, when the Lever (3) is in its normal position, the Points (1) being in the position shown. The wire is then connected by means of the pinching screw to the Coupling (4) and the Points are drawn over to the near side rail (6), which movement draws back the Coupling (5) into the position shown (5) in Fig. D. The end of the wire (2) is then inserted in the Coupling (5) and secured by the screw. When this operation is completed the Points will be in the position shown in Fig. B.

When the Lever (3) is pulled over, a thrust is given to Coupling (4) and Coupling (5), thus moving the Points (1) from the straight to the curve.

A Connecting Rod (7) Fig. B, having a right and left thread is connected to each lever in the frame, thus enabling a fine adjustment to be made. The great value of this Rod lies in the fact that, after we have coupled up our wire Rodding, we can adjust matters so that when the lever is pulled on or off any points to which it may be connected are moved fully to one side or the other. Thus the movable tongues are pressed closely to the rail, ensuring that the trains will travel smoothly over the points.

If it is found that, after cutting and fixing a wire from the lever frame to a signal or points, the length is a fraction of an inch too short, the wire may be lengthened slightly by cutting it again at some point and there introducing a coupling.

Fig. E shows the type of cutting pliers that we consider best for cutting the wire for the Control System. A pair of these pliers is enclosed in every Control Outfit.

The concluding instalment of this article, which will appear next month, will include illustrations and further particulars of the Control Rail and the Brake and Reverse Rail, and will contain additional instructions.



Fig.
E.

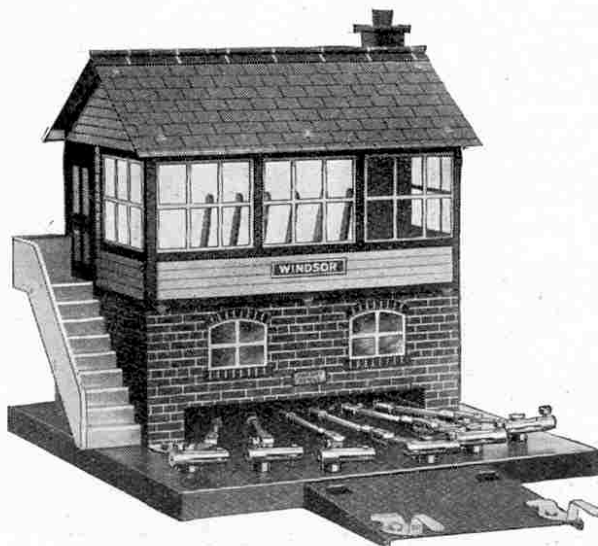


Fig. C. Hornby Signal Cabin, with Levers in position

ing the brake lever in the cab.

In Fig. K we show the underside of the clockwork of the Special No. 2 Loco. The cam (A) when operated by the Control Rail (1) Fig. J reverses the loco, and the cam (B) stops the loco, and automatically starts it again when the Control Rail is moved to the central position.

The mechanism of the Hornby Control System works so smoothly and easily that it is possible to operate signals and points placed at a very considerable distance from the Signal Cabin. This is a feature of great importance, because it enables the Control System to be applied to layouts covering a large area.

The Lever Frame, Signals and Rodding Compensators contained in the System may all be clamped to any part of the layout by means of the clamping levers and lugs shown in the illustrations.

Why the Levers are Coloured

The number of separate points or signals that can be operated from one Lever Frame is limited only by the number of levers in the frame, and after a great deal of experiment a frame of six levers has been adopted as the most generally suitable. By adding one or more additional lever frames at different points of the layout the number of points and signals that can be controlled may be extended almost indefinitely, so that there is no difficulty in adapting the System to any type of layout, however complicated.

The six levers provided in the Frame are coloured in accordance with actual railway practice and are intended to be used as follows:—

Green lever for distant signals, red for other signals; black (2 levers) for points; and white for spare lever. The blue lever is intended for the Hornby Brake and Reverse Rail and the Control Rail.

Owing to the special requirements of certain layouts, it may be desired to change the relative positions of the levers. To do this, it is only necessary to pull out the pivoting rod that passes through their centres. This may be removed quite easily by means of a pair of pliers, or even by gripping the end of the rod between two coins. The levers may then be withdrawn and after

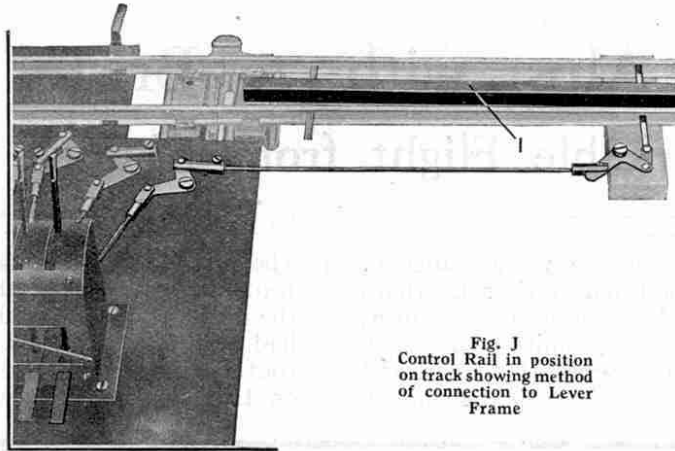


Fig. J
Control Rail in position
on track showing method
of connection to Lever
Frame

re-arrangement secured in their new positions by replacing the pivoting rod.

The levers are also numbered, so that their various functions may more easily be memorised. The numerals run in rotation from one to six and are printed on the top of the frame, adjacent to their respective levers.

The Hornby Control System may be adapted quite easily to any existing layout, and the foregoing description should demonstrate clearly the great increase

in realism brought about by its application. In the ordinary way the points and signals situated in various parts of a layout have to be operated individually by means of their levers and, owing to the rapidity with which the train travels, it is not always easy on a "busy" line to reach the switches in time to avoid a collision or other disaster, while it is certainly difficult for one individual to operate the signals in accordance with actual railway practice. These troubles are obviated by the Control System, because all switches are controlled from one point.

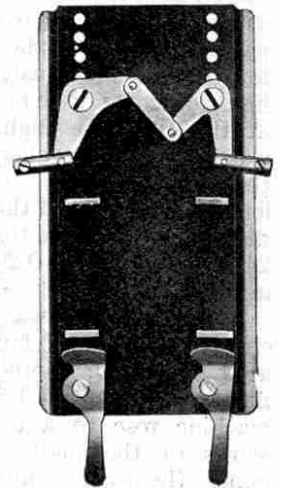
Adjustment and Lubrication

No difficulty should be experienced in obtaining the best possible results from the Hornby Control System providing proper care is taken in following out the instructions already given in this article. We would conclude, however, by emphasizing the importance of the following three points:

As little play as possible must be allowed in the connections between the operating levers and the signals, brake rails and points. In the case of the latter, especially, all connections must be carefully made and the Rodding cut to the exact length required in order that the movable tongues of the points shall make proper contact with the rails when switched over to a new position.

The set-screws in the Control Couplings must be screwed in very tightly, to obviate the possibility of the Rodding gradually pulling out from the Couplings after constant use.

Finally, it is most important to keep all the working parts well oiled, otherwise the levers will be found difficult to move, while the Rodding may become bent. Oil should be applied to the Rodding at every point where it passes through the Guide Brackets.



Rodding Compensator

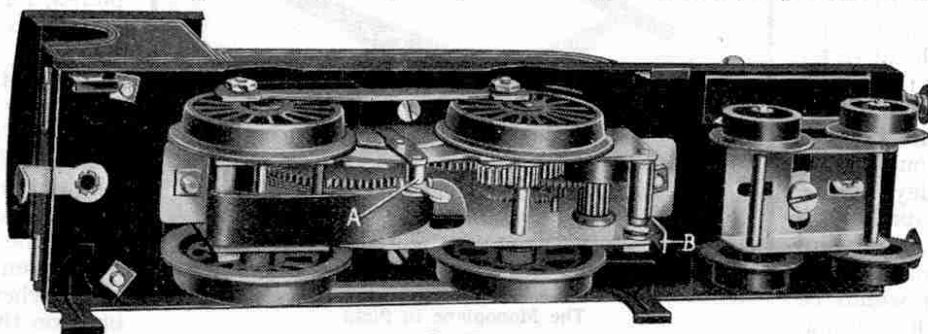


Fig. K

The Fascination of the Hornby Control System

By "Tommy Dodd"

WHEN a layout is being developed from the elementary stage by the provision of accessories of various kinds, special attention usually is given to the signals and other items required for safe operation. No lives are at stake in the event of a collision on a miniature layout, but it is necessary to have some means of control in order to obtain correct running conditions and to improve the appearance of the line. Each station should be provided with the necessary signals, and points or sidings should be duly protected in a similar manner. On real railways these are operated from a central point. It is not absolutely necessary to follow this plan in miniature, for Hornby Signals and Points can be operated in a satisfactory manner by means of hand levers. It is much more fascinating to raise or lower a signal, or to move a point, in the same manner as a real signaller, however, and this can be done by making use of the Hornby Control System.

Let us see first what the Hornby Control System is required to do. The types of signals chiefly used on British railways are "distant" and "home." The former is placed at a considerable distance ahead of the "home" signal, and is distinguished by having a fishtailed semaphore, the end of the semaphore of the "home" signal being square. The signals are usually placed on the left-hand side of the track, in accordance with the rule generally followed in real railways in this country. Besides the signals giving important indications to traffic on the main line, there are others controlling entrances to branches or sidings. The Hornby Control System provides for the operation of these and also for the working of the points leading to branch lines or sidings, by means of wires moved by centrally placed levers.

The first and most important item in the Control System is the Lever Frame, by means of which the points and signals can be operated from a Hornby No. 2 Signal Cabin. Three sizes of frames are now available, having two, four and six levers respectively. The smaller sized Frames have been introduced for use in situations where the Six-Lever Frame is unnecessarily large. For instance, the one with two levers can be used to control a small halt provided with "home" signals, one for each direction. Similarly the Four-Lever Frame can be employed at a small station of this kind if both "home" signals are provided with "distant" signals in accordance with the regular railway practice. A further advantage of the smaller Frames is that they may be used to extend the signalling arrangements of a terminal station where a Six-Lever Frame is used, if the station is enlarged or extra sidings are laid down.

The most suitable place for the Lever Frame usually is alongside a station, as in real practice, and on electric

railways it is advisable to place alongside it the transformer, or the resistance controller, if this is provided separately, so that complete control over all operations can be exercised from one position. The Signal Cabin of course is placed over the Frame itself, so that a very realistic appearance is given to the assembly. The levers of the Frame can then be handled without difficulty, as the roof and back of the cabin are hinged. It is not absolutely essential to cover the Lever Frame in this manner, however. In certain instances this component can be used as a ground frame, especially where the two-Lever Frame is concerned. Even a simple arrangement such as this gives the railway owner a distinct thrill when he realises the full advantage of being able to control two signals, or a point and its controlling signal, from the one place.

The levers of the Frames are made to operate signals and points by means of special rodding. There is no difficulty in wiring up signals or points, a pleasant task that is fully dealt with in the leaflet dealing with the Hornby Control System, a copy of which should be in the possession of every Hornby train enthusiast. The wires are fitted in the Guide Brackets

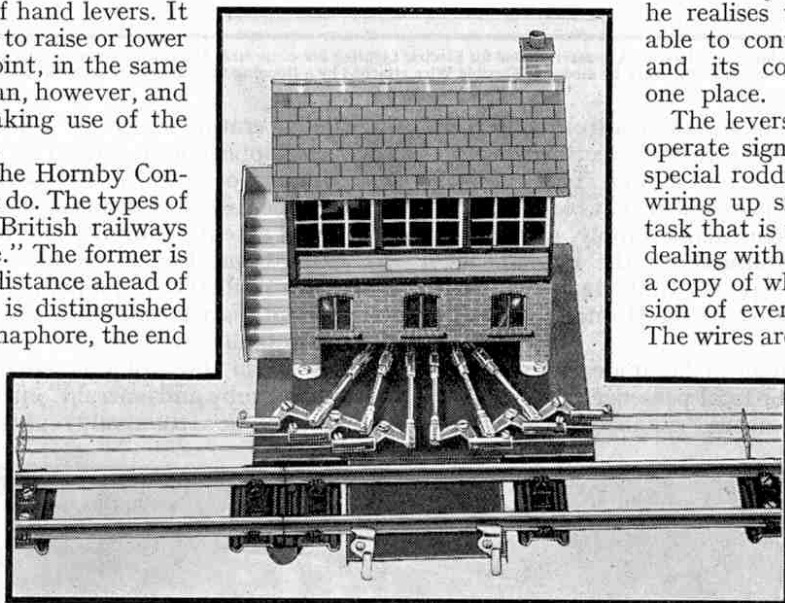
if their length makes this necessary, and then lie alongside the track in positions similar to those of the points, rods and signal wires used in actual railway practice. Further realism is given by the inclusion of the Rodding Compensator, by means of which a pull given to a signal or points wire can

be changed into a push, or vice versa, or by the introduction of the Rodding Traverse. The latter is designed to carry the control wire from one side of the track to the other, so that all signals and points, wherever they may be placed, can be controlled from the Lever Frame.

In order to obtain the best results from the use of the Control System it is desirable to screw the rails down to the baseboard, so as to supply the rigidity necessary to withstand the pull and push of the wires. It is not necessary to screw down all the sleepers, and choice can be made from those to be screwed down and those to which the Guide Brackets shall be attached.

An effort should be made to plan the wiring on neat lines. There are two good reasons for this. One is that the system will work best when the various wires are kept as straight as possible and as parallel to each other as circumstances allow. Buckled and twisted wires do not make the use of the System easy. The second is that the general appearance of the layout will be improved.

If the component parts of the Control System are carefully lubricated they will work smoothly and easily, so that signals and points at a considerable distance from the Lever Frame can be operated without difficulty.



The Hornby Six-Lever Frame fitted inside a No. 2 Signal Cabin and connected by means of special control wire to the Signals and Points. The Guide Brackets fastened to the sleepers by means of nuts and bolts keep the wire in position.