

Instructions to Drivers
For Running and Tending

The
"Super-
Sentinel"
Steam
Waggon

(3rd Edition)

29 S.S.

The "Sentinel" Waggon Works, Ltd.
SHREWSBURY.

Price 2/6

February, 1927.

Guarantee.

All implied conditions and warranties of every kind are expressly excluded. The Company will be bound only by the following express guarantee:—

Should any part of the Machine within three months from date of our invoice, fail through defective material or workmanship, the Purchaser will be entitled to a replacement of such part free of charge and delivered free on rail Shrewsbury, provided our inspection proves the claim justified. Such replacement shall be the measure of our liability on any ground under or in connection with the sale. This guarantee does not apply to rubber tyres, lamps, etc., or to speedometers, and other special accessories not of our manufacture.

Guarantee Conditions.

For claims under our GUARANTEE, broken parts must be returned to the makers of the Waggon.

The GUARANTEE does not cover any breakage by driver's fault, accident, or frost; nor does it involve any other liability than the replacement, f.o.r. Shrewsbury, of the defective part.

No claim for free replace parts under our GUARANTEE is allowed if the Waggon has been loaded beyond its stated capacity or driven at more than the maximum legal speed.

Our GUARANTEE does not apply to Rubber Tyres, Speedometers, or other parts or accessories not of our manufacture.

Waggon No.....

Registration No.....

Boiler No.....

NOTE.—When ordering Replace Parts, please refer to above Waggon Number, and give also List Number and Code Word given in Illustrated Parts List.

Date of Despatch from Makers' Works—



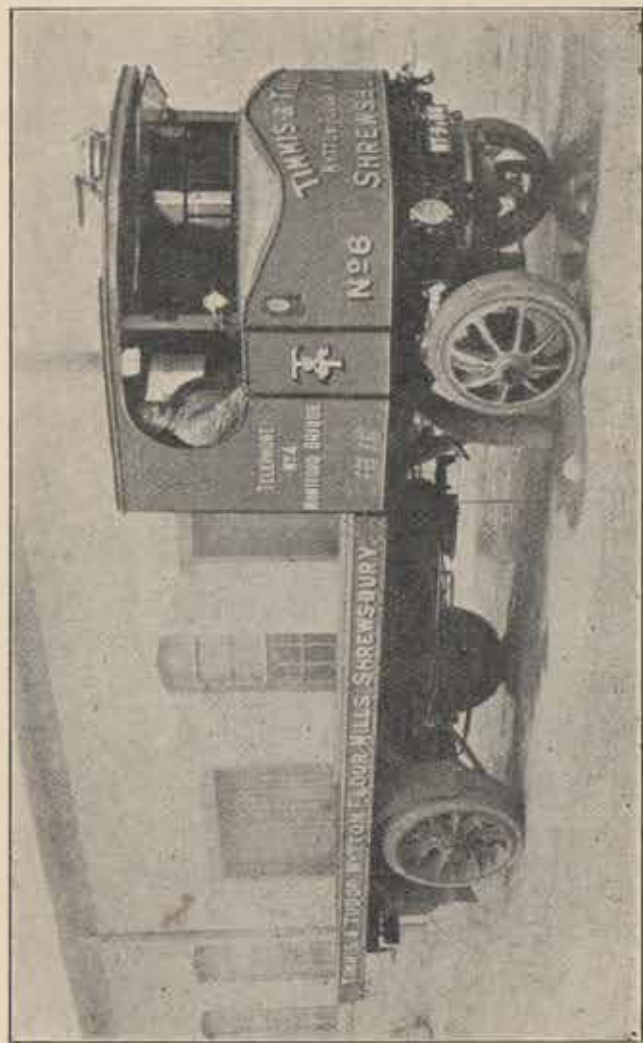
THE "SENTINEL" WAGGON WORKS, LTD.,
SHREWSBURY.

Telegrams—"Alley, Shrewsbury."

Telephone No.—2011 Shrewsbury (4 lines).

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A 6-TON "SUPER-SENTINEL"

The "Super-Sentinel" Steam Waggon.

Instructions to Drivers.

Introduction.

The success or otherwise of the vehicle which has just been placed in your hands rests with you—the driver. This may sound a very sweeping assertion to make, yet it is literally true.

In manufacturing "Super-Sentinel" Steam Waggon every conceivable care is taken both in the design, the materials, the workmanship, and the subsequent testing to ensure that every vehicle that leaves our Works is up to a definite standard of performance.

The design, thanks to very many years of experience in building thousands of similar waggons,

is such that this high standard will be maintained if only a very moderate amount of care and attention be given to the vehicle. Everything that can give trouble has, as far as possible, been eliminated.

You are given a fair start with the vehicle now in your charge; it is up to you to do your bit as well.

No piece of mechanism devised by man will stand, for ever, constant neglect and abuse, and a "Super-Sentinel" Steam Waggon is no exception to this rule. It is perhaps a fortunate fact for us, the manufacturers, that, thanks to the careful design and manufacture of the "Super," it will carry on under conditions which would put a less robust vehicle off the road. Nevertheless, abuse and neglect will have to be paid for in the long run, and it is the owner who pays.

This is specially true in the earlier days of its life, when it is yet relatively stiff and the parts have not had time to settle down in a proper manner.

A petrol vehicle, which is a far more delicate piece of mechanism than a "Super-Sentinel" Waggon would be irretrievably ruined if over-driven for the first five hundred miles of its life.

Many a "Super-Sentinel" goes straight from the Works on to its first job and manages to survive a consequent course of overdriving; nevertheless, the price of such folly will be paid sooner or later.

Any Commercial Vehicle, of which is required constant and steady performance with freedom from breakdown, must be treated in the same way as are the Locomotives of any Railway Company or, 'Buses of any large Omnibus Company.

A Locomotive seldom breaks down because:—

- 1st.—Both driver and fireman come on duty 30 minutes before their engine is due to start, and thoroughly examine all parts, oil up, and attend to fire, etc.
- 2nd.—After the day's run both remain 30 minutes for another careful examination.
- 3rd.—The engine is then taken in charge by a cleaner and a lad who thoroughly clean every part, keep in the boiler fire, and prepare everything for the next day's work.
- 4th.—Each engine has a "shed day" once a week, when the boiler is washed out and any repairs done.

5th.—A monthly examination of the boiler is made by a qualified man, and a report of its condition sent to the superintendent.

A Road Vehicle requires similar care, but this, of course, need not be so extensive as that given to the railway locomotive.

It is quite unnecessary for the driver to be a skilled Mechanic. All he needs is an average amount of common sense, care, intelligence, and a keen interest in his job and pride in his vehicle.

One of the best ways of ensuring the latter is to insist that the vehicle be kept clean. No man can take a pride in a vehicle covered with filth, and owners as well as drivers should make a special point of seeing that, above all, their vehicles are kept in a clean condition.

Not only does this facilitate frequent inspection and the detection of anything going wrong, but it is also the best insurance that drivers will come to feel that their vehicles are not merely pieces of mechanism, but a real "pal" to be depended upon in all circumstances.

The hints given in this book, if carefully and conscientiously followed, will go a long way to make your work pleasant and easy, and the owner's business profitable.

Instructions for Raising Steam and getting under way.

Filling Boiler.—The working level is 2 in. from the bottom of the gauge glass. To fill the boiler, remove brass filling plug in shell on left hand side, and fill with clean water to working level. Test working level as follows:—Turn the three gauge cock handles horizontal, turn the top and bottom handles back again vertical, then turn the middle handle vertical, when the water should rise to working level.

Filling Bunker.—Use the most suitable fuel to be obtained in your district; a good steam coal such as "Windber" or "Penrykyber," is usually the best, but good Gas Coke will do equally well, and is just as economical providing its cost is not more than 55 or 60 per cent. that of Welsh coal.

Lighting Fire.—Unhook ashpan, tilt firegrate, clean both and replace, half filling ashpan with water. Lift furnace door on boiler top, light some shavings or waste soaked in paraffin and throw down on to grate. Follow with plenty of firewood until there is a good blaze and a thick fire. Spread a layer of coke or coal on top, and when red hot add more slowly, spreading it from time to time.

Testing Valves and Hand Levers.—See that the main steam regulator and the three auxiliary steam valves work freely. Try the reversing lever, and place it in Stop notch. Test the hand and foot brakes and steering gear.

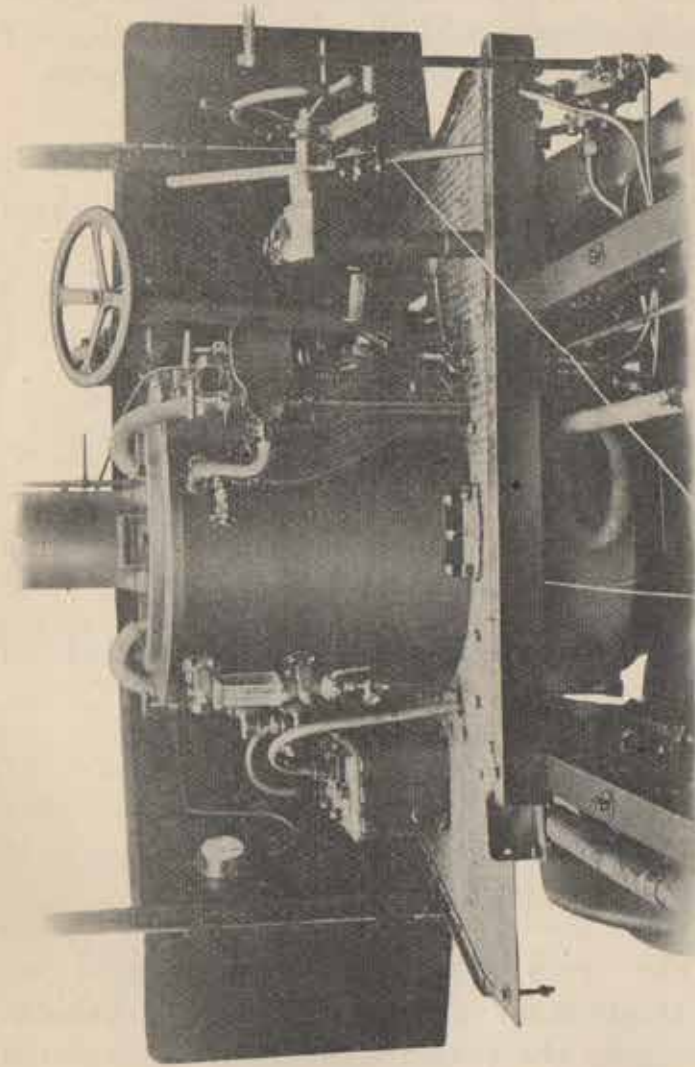
Filling Tank.—Always endeavour to get pure and clean water. Use town or drinking water from the mains wherever possible. Fill the tank either by the water lifter through the suction hose with a strainer placed in a clean pail under a tap; or by a hose from the tap inserted into filling hole on top of tank.

Testing Injector.—For detailed instructions for the handling of Injectors fitted to “Super-Sentinel” Waggon see page 29.

Adjustments.—Each day see that no nuts are working loose, not forgetting those on the bolts clamping front and rear spring bearings. See all glands, particularly those for engine piston rods, are properly packed and tight.

Lubrication.

This is one of the most important points in connection with the tending of any piece of mechanism.



VIEW OF CAB FROM DRIVER'S SEAT SHOWING THE CONVENIENCE OF ALL CONTROL HANDLES.

The designers of the "Super-Sentinel" Waggon have arranged matters so as to make lubrication thoroughly efficient and effective if you will carry out the very simple instructions given herewith.

Choice of Lubricants.—In the first place it cannot be too strongly emphasised that "Super-Sentinel" Vehicles should be lubricated only with lubricants thoroughly suited to their particular requirements. These are three in number, namely:—

1. Special "Sentinel" Cylinder Oil for use in lubricating the cylinders.
2. "Sentinel" Crankcase Oil for lubricating all the other parts of the engine.
3. "Sentinel" Grease for lubricating all the Chassis parts and filling Grease Nipples and Stauffers.

The reason why the "Sentinel" Company market these oils and this grease is simply in the interests of their customers.

The conditions in a Steam Waggon are different from those in a Petrol Vehicle. Owing to the presence of highly superheated steam, the cylinder oil must conform to definite physical and chemical requirements.

The crankcase oil must be capable of forming a temporary emulsion with any water that may find its way in the crankcase, and of separating out again when the vehicle is stationary; and the grease should be of the highest possible quality.

To protect their customers the "Sentinel" series of lubricants have been put on the market, and owing to the fact that the Company does not desire to make any profit from the handling of these goods, they can be sold to customers cheaper—when their quality is taken into account—than can the goods of firms who gain a living from the sale of such lubricants.

It is advisable, therefore, always to be on the very safe side, and use only the lubricants cited above.

A Grease Gun that fits all the Nipples on the Waggon is supplied with each new vehicle. Before filling either Nipples, Stauffers or Oil Boxes, great care must be taken that all dirt and dust is carefully removed, otherwise endless trouble will ensue.

Clean Oil and Grease Necessary.—It is of the utmost importance that for all purposes your oil and grease should be perfectly free from grit and chips. Keep the vessels containing

lubricants closely sealed, and when drawing off oil allow it to run through a strainer before using on the Waggon.

Front Axle Journals.—Keep well lubricated, inspecting daily. Fill grease cups on top pivots with soft grease or a mixture of Crankcase Oil and Grease, using a larger proportion of grease in hot weather. The lower Nipples underneath the Pivots should be well charged with grease by means of the grease gun.

Rear Wheel Bushes.—Grease should be forced daily through Nipples provided on Rear Wheel Hub Caps. The right quantity is about half a gun-full in each hub per day, in three doses. The grease should not be too stiff.

Crank Case.—Examine daily and pour new Crankcase Oil through crankcase filler until oil level is above test cock provided on left-hand side of engine. Great care should be taken to see that only oil marked "Super-Sentinel" Crankcase Oil is used here. The oil should be poured in with the test cock open until

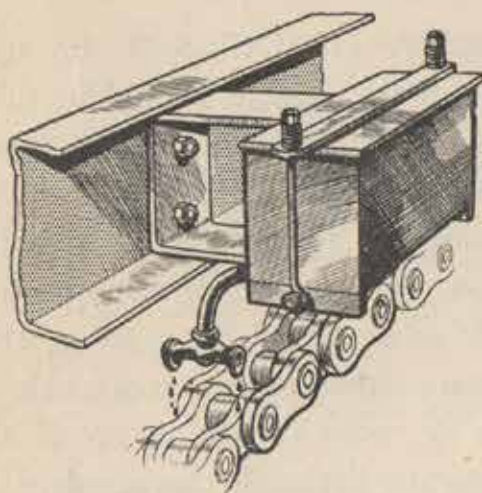


The window fitted to latest models through which correct oil level can be seen.

it runs out of the latter in a definite stream. A few drops issuing from the test cock is no indication that the oil is up to the proper working level.

Cylinder Lubricator.—The Cylinder Lubricator, on the off-side of the vehicle, should be filled with "Sentinel" Cylinder Oil. The throw of the actuating rod of the Cylinder Lubricator has been adjusted at the Works, to give the best lubrication with a minimum consumption of oil. Should it be found, in practice, that the Cylinders are either getting too much oil (characterised by rapid carboning up of the Blast Nozzle) or too little oil (characterised by a groaning sound in the engine, when same has been standing for a short time, and is then started up), the adjustment of the actuating rod can be slightly altered. Moving it towards the Pivot of Cylinder Lubricator increases the quantity of oil, moving it down reduces. The Cylinder Lubricator can also be worked by hand, for giving an extra dose of oil for temporary occasions. This will be referred to again later.

Chains.—Keep well oiled and clean. Chain lubricators on side of chassis should be filled daily or oftener if necessary. The drip feeds on these should be adjusted to give from one to two drips per minute.



How the chain is lubricated from a twin-ended drip pipe.

It is a great advantage to keep a spare pair of chains, so that one can be thoroughly cleaned and oiled when the other is in use. This adds much to their life.

Grease Nipples and Stauffers.—All grease nipples throughout the vehicle should have grease forced in them daily by means of grease

Chains should be removed at least once per month, thoroughly cleaned in paraffin and carefully lubricated by being soaked in hot grease. A mixture of grease and graphite is even better.

gun, and stauffers should be given a turn and refilled as soon as empty.

Steering Gear.—The oil box at base of steering column should be kept filled with Crankcase oil. From time to time extra oil should be added through the lubricator on top of the steering wheel. A plug is also provided in front channel for the same purpose.

Before Starting.—Remember your licence. Examine the Waggon all over. See that your fire is bright; that your boiler water level is right; that you have about 200 lbs. steam; that you have all necessary tools, spares, packing, etc.; that your four lamps are in order.

On Waggon fitted with electric light, this should be tested in accordance with the detailed instructions given in the book supplied with the electric light equipment, copy of which is distributed by us with all Waggon so fitted.

Running Instructions.

Warming Cylinders.—With reversing lever still in Stop notch, open engine drain valve by handle on front of bunker. Open Stop Valve gently and blow through cylinders for two minutes.

Oiling Cylinders.—While steam is blowing through Cylinders work the small force feed oil pump by hand for about twenty strokes.

Starting.—Push reversing lever to Start, open Stop Valve slightly, and when you have got under way pull lever to Fast and go ahead.

A common fault is to open the Stop Valve too wide. Never give the engine more than just enough steam for the work you require it to do, otherwise there will be no reserve of pressure when needed for a hill, and also an excessive blast will be sent up the funnel, spoiling the fire, wasting water and fuel, and perhaps causing sparks.

Management of Fire and Draught.—This is very important if satisfactory running is desired and freedom from bad steaming avoided.

When a Waggon is first moved off after it has been standing perhaps an hour or two, the fire is dull; you should therefore go easy with it for the first quarter of a mile to give the fire a chance to burn up under the influence of the blast.

The keenness of this blast is dependent principally on the size of the Blast Nozzle;

the smaller the Blast Nozzle the keener the blast, but also the greater the fuel consumption. We send out "Super-Sentinel" Waggons fitted with a Blast Nozzle of such a size that it will give adequate blast to maintain a proper head of steam with a bright fire, without wasting fuel. Quite obviously, therefore, when the fire is dull, extra blast will be required, and this is obtained by means of the Blower Valve which is situated on the right hand side of the steam regulator.

When, therefore, you start away with the fire somewhat dull, and find that steam falls steadily all the time, immediately put on the Blower Valve so as to help brighten the fire, and keep it open until the boiler is giving all the steam required for the work in hand.

Some drivers have the idea that the Blower Valve should not be used except for raising steam from cold.

When they have a poor fire and find that the steam is not being maintained, they attempt to remedy matters by closing the Stop Valve; this, of course, makes matters worse, as it reduces the amount of blast.

The special combined Blast Pipe and Blower Ring fitted to the latest pattern "Super-

Sentinel" Waggon is designed practically to take the place of a variable Blast Nozzle. The holes through which live steam issues are of such size that no matter if the Blower Valve be turned right on (full), no damage to the fire can result.

The judicious use of the Blower Valve as indicated above is extremely important on "Super-Sentinel" Vehicles in giving at all times a good head of steam with the minimum possible fuel consumption.

If the above hints are carefully followed and the Stop Valve opening properly controlled there will be ample steam at all times, and it will be easy to keep a clean fire.

Speed.—The legal limit in the United Kingdom is painted on the waggon frame, and should not be exceeded. Go dead slow over gutters, badly-laid street setts, and rough roads.

Loads.—The waggons are designed to carry without injury on a flat platform body the loads specified on maker's nameplate, and these stated loads must on no account be exceeded. Care should be taken that the load is evenly distributed over the platform.

Lamps.—Between the times of one hour after sunset and one hour before sunrise all your lamps must be lighted. Tail lamps must be lighted thirty minutes earlier than head lamps. See that your tail lamps shine on the Registration Number. If any of your lights go out you are liable to be fined.

In the case of vehicles fitted with electric light, follow the instructions given in the manual supplied by the makers, a copy of which is sent out by us with all vehicles so equipped.

Timid Horses.—If a policeman, or driver of a restive horse, raises his hand, it is a signal that you must stop at once, and wait till the horse has got safely past.

Accidents.—Should an accident occur while you are in charge, you must, if possible, get the number of any policeman who may have seen it, and the names and addresses of at least two witnesses, and report at once on your return.

You should be very careful not to admit liability under any circumstances whatever, as the Insurance Company who will be looking after the interests of your employer cannot act

effectively if you admit in any way that you were at fault.

There is quite a natural tendency when you run into another fellow to be prepared to take half the blame, but this friendly admission may be used against you later on as evidence, and spoil your case.

You should, if possible, take careful measurements of the position of your and the other vehicle, in order that you, or your Insurance Company may be able to prove that you were in your right place on the road when the accident occurred.

Care of the Waggon on the Road.

Management of Boiler.—With a little practice a steady water level at about 2 in. from bottom of glass, and a steady steam pressure of about 220 lbs. are easily maintained. Care must be taken to keep the fire clean and bright and spread evenly all over the fire-grate. Put in fuel every 7 or 8 minutes or oftener when roads are heavy or when climbing hills, aiming always to keep a bright fire about 6 in. thick, and allowing enough space between fire and tubes for complete combustion. Keep ashpan closed as much as possible when running.

If steam pressure tends to rise, raise the water level as much as possible. When standing, close ashpan and funnel damper. If steam still rises, ease top off stoking shoot. Never let steam blow off in the street.

If Boiler steams badly look to the grate, and if clinker has gathered, break it up and draw it out from under the fire. Accumulation of dust on tubes causes bad steaming; this should be seen to on "shed day," or oftener if it proves necessary through using bad fuel. It should be removed as described elsewhere. If steam falls persistently make use of blower gently, as detailed on page 23.

Test Safety Valve daily by allowing it to blow off at 230 lbs. pressure.

As explained under the heading—"Management of Draught"—"Super-Sentinel" Boilers are set to suit the average conditions likely to be met with.

If after carefully carrying out the instructions given, boiler still steams badly and steam cannot be maintained, this points to a defect in the fuel used. In this case the best thing to do is to communicate with us, giving full particulars of the fuel, and we will advise you further.

When writing you should also state the quantity of water used, as possibly the fault may be in the engine, and not in the fuel, and this latter information will enable us to determine exactly where it lies.

Climbing Hills.—On approaching a hill see that you have at least 220 lbs. steam, water rather over 3 in. from bottom of glass, and a large bright fire. Use the Fast notch of your reversing lever, and if waggon labours at all use the Start notch, regulating the Stop valve to suit. NOTE.—In going uphill water level shows higher in glass than it really is on level ground.

Boiler Feeding.—When the waggon is running, the boiler is fed by the feed pump, the amount being controlled by the Bye-pass Valve.

Feed Check Valve.—This is combined with a shut-off valve which must always be full open when the waggon is running. If the check valve sticks, through the use of bad water, stop the waggon, close the shut-off valve, take off check valve cover and clean check valve and seat.

CAUTION.—The shut-off valve must be fully opened again before restarting the waggon. A “tell-tale” is provided which takes

the form of a number of flats along the valve spindle. This allows the water to be discharged into the cab, should the driver have forgotten to open up the valve.

Injectors.

Hot Water Injectors.

There are four models of hot water injector which have been fitted to the “Super-Sentinel” waggon at different times. These are described as follows:—

Model A. (Injector numbers 111203 and on.)

This is identical with Model B, except that it has been fitted with a small handle which enables the overflow valve to be released in the event of its “sticking.” Model A is fitted under the footplate and is worked by means of an extended handle, situated by the driving seat.

Model B. (Injector numbers 109057 to 111202)

The following self-contained fittings are embodied in this hot water model:

(A) A combined water regulator and stop cock.

(B) A delivery back pressure valve.

The delivery check valve is a separate fitting on the boiler. By shutting this and the auxiliary

and main steam valves, the injector is isolated, and all parts can be withdrawn for examination, cleaning or renewal while the boiler is under steam. See Fig. 1.

Model C. (Injector numbers 105616 to 109056.) This hot water model is virtually the same as Model B, except that Model C has the delivery check valve self-contained (Fig. 2) and the method of attachment is slightly different.

Model D. (Injector numbers up to 105615.) Fig. 3. This is identical with Model C, except for the overflow valve. This difference is made clear in the instructions for stripping the injectors given on page 34.

To operate hot water injectors (Models A, B, C, D.)

1. See that the delivery stop valve is full open.
2. Open the water cock full.
3. Open the auxiliary steam valve and wait for the injector to pick up water, then open the main steam valve full.
4. If the overflow is not "dry" gradually close the water cock until it becomes "dry"; the injector is then at work.

If the injector should for any reason "throw off" when working, shut the main steam valve and open the water cock full, and wait until the injector

"picks up" again; then once more open the main steam valve and, if necessary, gradually close the water cock as before.

To shut off the injector, simply shut both steam valves. It is important to note that when the injector is not working the water cock should be kept shut so that any leakage through the steam and delivery stop valves will drain through the overflow; with the water cock left open, otherwise this leakage reaches and heats up the suction pipe and makes starting difficult.

White's Injectors. (Model E.)—This injector, although not essentially a hot water injector, works with warm water at steam pressures from 60 lbs. per sq. in. upwards. The self-contained fittings are similar to those in the Model C injector although the water cock is of slightly different design.

How to work Model E injector.

1. See that the delivery stop valve is full open.
2. Open the water cock full.
3. Open the steam supply valve slightly and wait till the injector picks up water; then open the steam valve full.
4. If the overflow is not "dry," gradually

close the water cock until it becomes "dry" and the injector "sings"; the injector is then at work.

To shut off the injector simply close the steam supply valve. When the injector is not working, the water cock should be kept closed so that any leakage through the steam or delivery stop valves, will drain through the overflow. With the water cock left open, this leakage reaches and heats up the suction pipe and makes starting very difficult.

How to strip injectors.

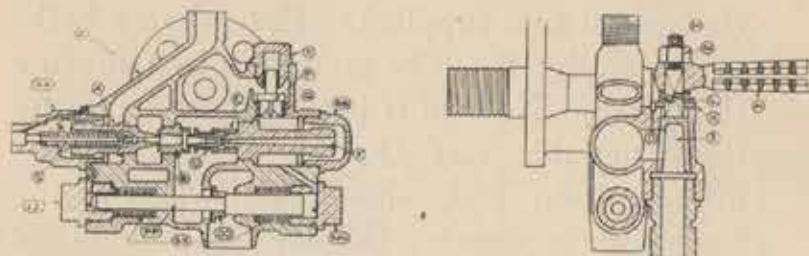
GENERAL INSTRUCTIONS. When stripping and reassembling injectors, treat all parts with the greatest care—especially the nozzles—as the slightest knock, dent or strain may quite well stop the efficient working of the injector. Before putting back nozzles, examine the shoulders and collars on the injector body and nozzles, and wipe them perfectly clean. When screwing up, do not use any jointing; a little vaseline on the threads is recommended. Drivers are not advised to attempt any but the simplest overhauls such as periodic cleaning of the injector when this is required.

Special instructions for all models.

NOZZLES, ETC. The auxiliary steam nozzle G* comes away with the steam end cap A.A.,

* See Note under reference Lists.

MODELS A AND B INJECTOR.



REFERENCE LIST.

A	Steam nozzle	E	Combining nozzle	COMPLETE WATERCOCK
B	Lifting tube	F	Delivery nozzle	
C	Sliding thimble	*G	Auxiliary steam nozzle*	
H	Watercock handle			
J	Watercock plug			
K	Watercock stop washer			
L	Watercock spring washer			
M	Watercock nut			
N	Watercock split pin			
O	Watercock stop pin			
P	Delivery back-pressure valve			OVERFLOW VALVE
Q	Delivery back-pressure valve seat			
R	Delivery back-pressure valve cap			
Z	Injector body			
AA*	Steam end cap*			
BB*	Delivery end cap*			
JJ	Overflow valve cap (steam end)			
NN	Overflow valve cap (delivery end)			
OO	Overflow valve			
PP	Overflow valve piston			
QQ	Overflow valve packing washer (steam end)			
RR	Overflow valve packing washer (delivery end)			
SS	Lead moss packing			

* On waggons where the water tank is not lower than the injector, the auxiliary steam nozzle G is dispensed with and the steam end cap AA is replaced by an end cap exactly similar to the delivery end cap BB.

FIG. 1.

and can be removed entirely from this cap by means of one of the special keys supplied with each injector; the main steam nozzle F can be removed by an ordinary key; (and, with it, the combining nozzle E), the

lifting tube B can then be removed by one of the special keys supplied. The delivery back-pressure valve P can be ground in by removing the cap R. No tool is provided for removing the renewable seat Q; this seat is pressed into position and, should renewal by any chance be necessary, the injector should be sent back to us.

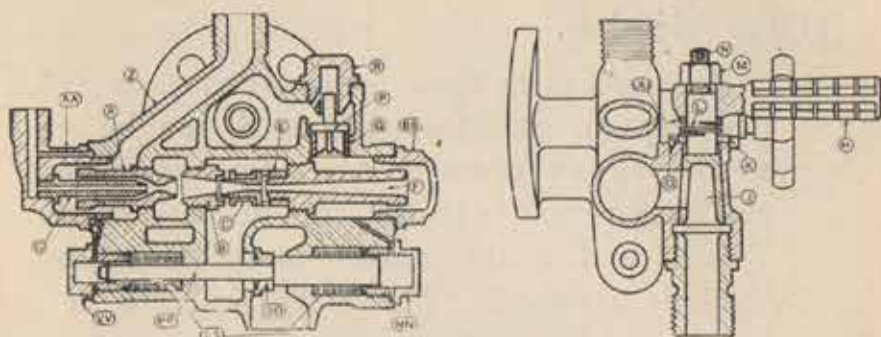
OVERFLOW VALVE. (1) For Models A, B and C.

Unscrew both overflow caps JJ or VV and NN, hold hand under the overflow branch, and push out the overflow valve piston PP from left to right; the overflow valve OO will drop into the hand through the overflow branch. In replacing see that the lead moss packing SS is undisturbed; failing which, repack carefully. Care must always be taken to ensure that the piston is free after packing.

(2) For Model D.

Remove overflow caps JJ and KK, insert the special flat fork key through the overflow branch and hold the overflow valve EE which is provided with suitable flats; then by means of the special small box key, which should be fitted on the square at the left hand end of the overflow valve spindle FF, rotate this spindle in a clockwise direction; this action

MODEL C INJECTOR.



REFERENCE LIST.

A	Steam nozzle	E Combining nozzle	
B	Lifting tube	F Delivery nozzle	
C	Sliding thimble	*G Auxiliary steam nozzle*	
H	Watercock handle		COMPLETE WATERCOCK
J	Watercock plug		
K	Watercock stop washer		
L	Watercock spring washer		
M	Watercock nut		
N	Watercock split pin		
O	Watercock stop pin		
P	Delivery back-pressure valve		
Q	Delivery back-pressure valve seat		
R	Delivery back-pressure valve cap		
Z	Injector body		OVERFLOW VALVE
AA*	Steam and cap*		
BB*	Delivery and cap*		
JJ	Overflow valve cap (steam end)		
NN	Overflow valve cap (delivery end)		
OO	Overflow valve		
PP	Overflow valve piston		
QQ	Overflow valve packing washer (steam end)		
RR	Overflow valve packing washer (delivery end)		
SS	Lead moss packing		

* On waggons where the water tank is not lower than the injector, the auxiliary steam nozzle G is dispensed with and the steam end cap AA is replaced by an end cap exactly similar to the delivery end cap BB.

FIG. 2.

will release the overflow valve EE and enable the spindle FF to be taken out.

(3) For Model E.

By unscrewing the steam end cap AA (see Fig. 4), the steam nozzle A can be removed by an ordinary key. By unscrewing the delivery end cap BB, the delivery nozzle F—and with it the jumper nozzle D—can be similarly removed. The lifting tube B can be cleaned in position after the removal of the steam nozzle, but, if renewal is necessary, it can be removed by the special tool supplied with each injector. The delivery back-pressure valve P can be ground in by unscrewing the cap R. No tool is provided for removing the renewable seat Q: this seat is pressed into place and if its renewal is necessary the injector should be returned to us.

Tipping Injectors.

This injector is specially designed to give a very high pressure on the tipping ram. The pressure being steady and continuous, wear and tear on the tipping mechanism is reduced to a minimum. No lubrication or packing of glands are required. It is easy to operate, the tipping action is smooth and quick, and time is saved on each tip.

MODEL D INJECTOR.

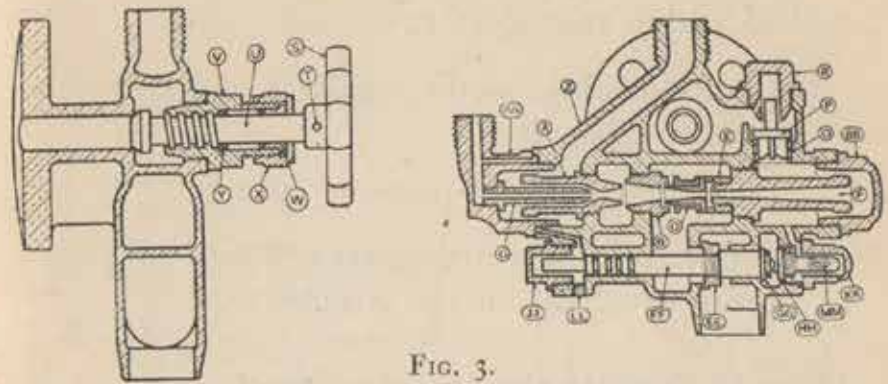
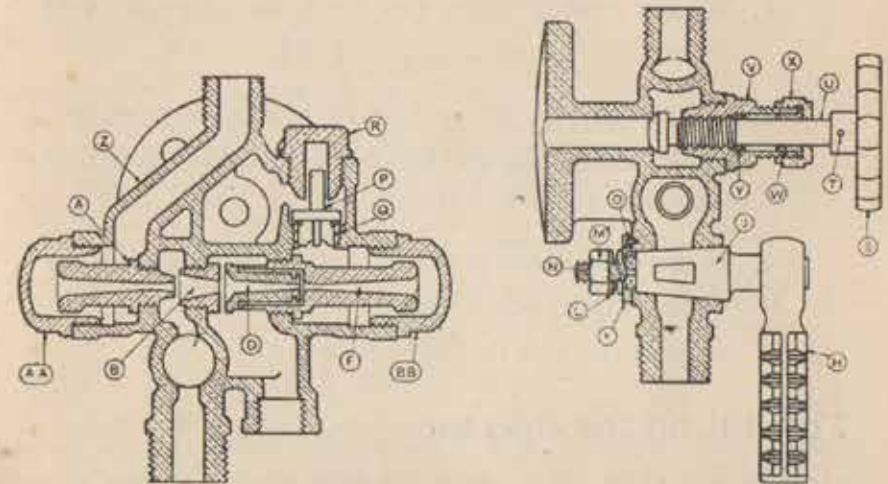


FIG. 3.

MODEL E INJECTOR.



REFERENCE LIST.

A	Steam nozzle		P	Delivery back-pressure valve	
B	Lifting tube		Q	Delivery back-pressure valve	
D	Jumper nozzle		R	Delivery back-pressure valve cap	
F	Delivery nozzle		S	Delivery stop valve handwheel	
H	Watercock handle		T	Delivery stop valve taper pin	COMPLETE DELIVERY STOP VALVE
J	Watercock plug		U	Delivery stop valve spindle	
K	Watercock stop washer	COMPLETE WATER- COCK	V	Delivery stop valve spindle guide	
L	Watercock spring washer		W	Delivery stop valve gland	
M	Watercock nut		X	Delivery stop valve gland nut	
N	Watercock split pin		Y	Delivery stop valve packing ring	
O	Watercock stop pin		AA	Steam end cap	These are inter- changeable
Z	Injector body		BB	Delivery end cap	

FIG. 4.

The following self-contained fittings are embodied within the injector:—

(A) A combined water regulator and stopcock with handle.

(B) A delivery back-pressure valve.

All other necessary fittings are of course supplied ready fitted up on the waggon.

How to operate the injector itself.

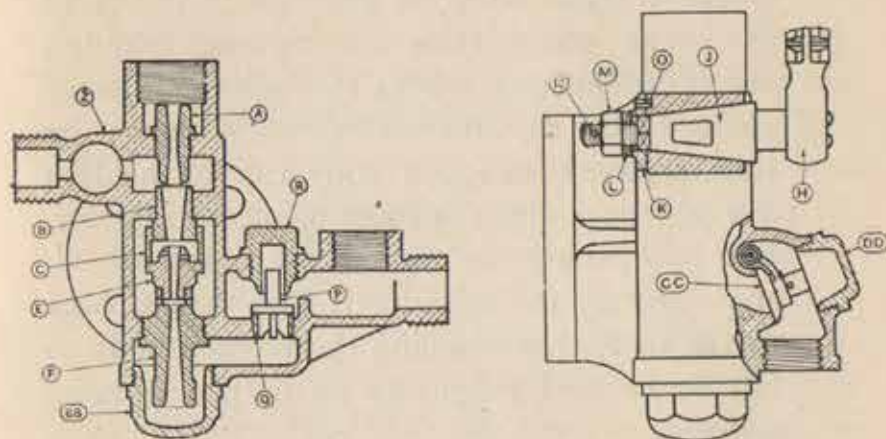
1. Admit water from the tank by opening full the left-hand watercock M.
2. Immediately, so as not to waste any water, admit steam by opening the steam valve to its fullest extent.
3. If the overflow is not "dry," gradually close the watercock M until it becomes "dry"; the injector is then at work.

To shut off the injector.

Simply shut the steam valve and the watercock M.

How to tip the Waggon Body.—To do this the right-hand watercock N (Fig. 5) must be shut (*i.e.*, its handle vertically downwards as in the illustration): then operate the injector

TIPPING INJECTOR.



REFERENCE LIST.

A	Steam nozzle	CC	Overflow valve (complete)	
B	Lifting tube	DD	Overflow valve cap	
C	Sliding thimble	H	Watercock handle	} COMPLETE WATERCOCK
E	Combining nozzle	J	Watercock plug	
F	Delivery nozzle	K	Watercock stop washer	
P	Delivery back-pressure valve	E	Watercock spring washer	
Q	Delivery back-pressure valve seat	M	Watercock nut	
R	Delivery back-pressure valve cap	N	Watercock split pin	
Z	Injector body	O	Watercock stop pin	
BB	Delivery end cap			

FIG. 5.

as detailed above and the waggon body will lift and can be kept at any angle by merely shutting off the injector.

To lower the body, gradually open the right-hand watercock N by lifting its handle (the steam valve being already shut). The explanation is that the closing of the steam valve stops

the injector working; consequently the weight of the waggon body on the ram is trying to force the water from the tipping cylinder, but it cannot force it back through the injector owing to the injector back-pressure valve: by this means the waggon body can be held in any desired position by shutting off the injector, but by opening the right-hand watercock N, the water in the cylinder is free to pass back to the tank, thus enabling the waggon body to fall by its own weight to its normal running position.

How to strip the injector (see also General Instructions on page 32).

There being no pressure on the delivery side of the injector when the waggon body is in normal running position, the injector can be stripped while the boiler is under steam by shutting the strainer cock, the right-hand watercock N and the steam valve. By detaching the steam valve the steam nozzle A can be removed by the special box-key supplied; by unscrewing the end cap BB delivery nozzle E and combining nozzle F can be removed (in one piece) by an ordinary spanner, and with them will come away the sliding thimble C. The lifting tube B is pressed into

place, and owing to the fact that it is the least liable of all the parts to wear and that the injector is comparatively seldom used, it should practically never need renewing. It can be cleaned in position after the steam nozzle has been removed; if by any chance renewal is necessary, the injector should be returned to us. The delivery back pressure valve P can be ground in by removing the cap R; similarly the overflow valve CC by removing the cap DD. No tool is provided for removing the renewable seat Q; this seat is pressed into place like the lifting tube, and if its renewal is necessary, the injector should be returned to us.

General Hints.

Failure of Pump and Injector.—The water level must never be allowed to go below bottom of glass. If water cannot be got into boiler and water level is very low, stop, close ashpan and damper. If steam keeps rising, damp fire with coke dust or even road scrapings. Do not draw out the fire: you can always depend on the fusible plug in extremities. Then find out the cause as already described above.

Cylinder Lubrication.—Test this at each stop to see if all is working properly.

Foot Release Valve.—This is of great value, especially in manœuvring, though it serves other purposes.

By depressing the foot pedal, steam is cut off quickly from the engine and sent up the funnel until stop valve is shut.

In descending hills it is used to control the speed, with stop valve shut and reversing lever in Reverse notch.

NOTE.—Foot pedal must always be depressed while moving reversing lever from “Forward” to “Reverse” or “Reverse” to “Forward.”

To Stop Slowly on the Level.—Shut off steam, and allow waggon to roll to a standstill. Put on hand brake hard and put reversing lever at Stop notch. If stopping for any length of time open drain valve.

To Stop more Quickly.—Press foot pedal, put reversing lever into Reverse notch, shut off steam and release foot pedal. As soon as waggon has stopped put on brake and put reversing lever into Stop notch. As a rule the foot brake should be used for pulling up, and the foot release valve be retained as an emergency brake only.

To Stop Nearly Instantaneously at the Risk of Damaging the Engine.—Press foot pedal, reverse engine, then gently take foot off pedal, keeping steam still on, shutting off steam as soon as waggon stops.

NOTE.—This method should only be used to avoid a collision or to prevent anyone from being run over.

Descending Steep Hills.—Close stop valve, press down foot release valve, put the reversing lever in the “reverse notch,” and if the waggon still travels too quickly, let the foot pedal up a little. If the pedal is let right up, it will probably stop the waggon altogether. In the case of particularly bad gradients it may be necessary to apply the hand brake also.

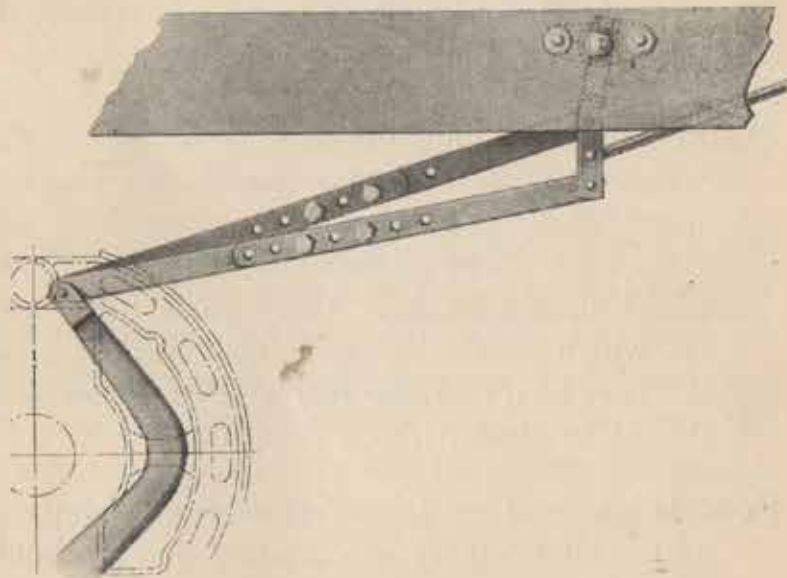
Hand Brake.—This brake is used for holding waggon when stationary, and for checking speed of vehicle when descending long and steep hills. The oil box that carries the hand wheel should be kept three parts filled with oil, which should be replenished weekly. Also the cam boxes on the rear axle brake housings should be filled with oil monthly.

Foot Brake.—This brake is used for stopping under all ordinary circumstances. It should

be used wherever possible in preference to the foot release valve.

Both these brakes are adjusted by means of the take-up gear on the rods. They should be set so that when the brakes are released the internal brake shoes just clear the drums. If the brakes are adjusted too close, the waggon will waste fuel and water. When adjusting it is a good plan to jack up each road wheel in turn and make sure that it is perfectly free when the brakes are off.

When brakes are being adjusted care should be taken to see that the rear brake rods are



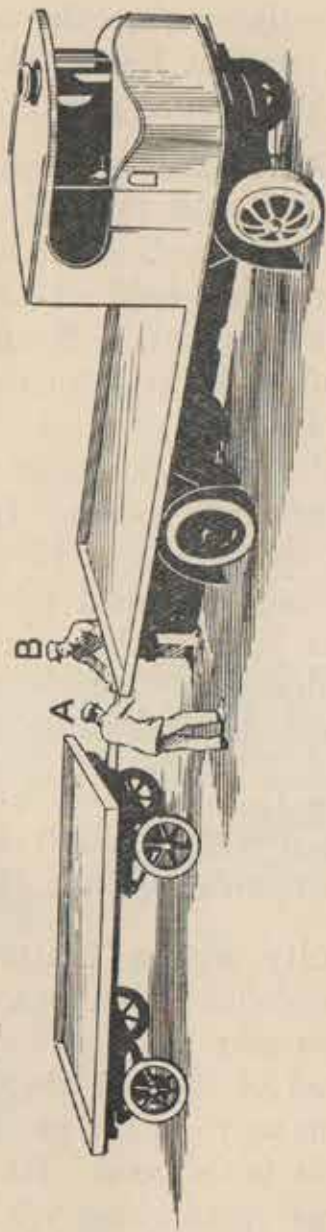
adjusted correctly so that the compensating links lie in a straight line as shown on the drawing on the opposite page.

Coupling the Draw Bar.—When backing towards a Trailer in order to couple the Waggon thereto, move very slowly to avoid accident to the person who has hold of the draw bar. With a “Super-Sentinel” Waggon you can move backwards or forwards an inch at a time as easily as a yard.

When coupling up to a Trailer which is not standing immediately behind the Waggon, and must be approached at an angle by the Waggon, the coupler should always stand on the more open side, as then if the draw bar misses the draw bar bracket the coupler cannot be crushed. (See sketch overleaf.)

Distributing the Load.—Never divide the load equally between Waggon and Trailer, but put the greater proportion on the Waggon.

Carrying Capacity with a Trailer.—With the 6-ton Waggon loaded with 6 tons, an additional load of 4 tons may be carried on a Trailer. With this load of 10 tons the Waggon will climb gradients up to 1 in 6, provided that the road surface is fairly good. When a Trailer is used the legal speed of any vehicle is 5 miles



THE WAGGON IS BACKING UP TO THE TRAILER AT AN ANGLE. A AND B ARE COUPLING-UP THE TRAILER AND SHOULD THE DRAWBAR MISS THE DRAWBAR BRACKET, A WILL BE CRUSHED BETWEEN WAGGON AND TRAILER; B CANNOT BE SO CAUGHT AS HE WOULD BE PUSHED OUT OF THE WAY.

ALWAYS KEEP TO THE SAFE SIDE.

an hour. When a Waggon is fitted with guaranteed rubber tyres, the tyre-maker's consent to the use of a Trailer must be obtained or the tyre guarantee becomes void.

Descending Hills with a Trailer.—Before descending hills take care to put on the Trailer brake, otherwise the Waggon will get completely out of control if you attempt to check its speed by braking in the manner described previously.

Shed Day.

At least once a week, say every Saturday forenoon, the waggon should be “stabled,” and the following attended to at the periods stated:—

Blowing Down Boiler.—This should be done as often as convenient during the week to save work on “shed day.” With a low steam pressure put on injector and open the blow-off cock to remove mud from the bottom of the boiler.

Washing Out Boiler.—Remove all fire and let steam pressure drop to about 10 lbs., slacken off the plugs in the side of boiler at the bottom, open blow-off cock and after steam pressure has dropped remove plugs and hand hole cover

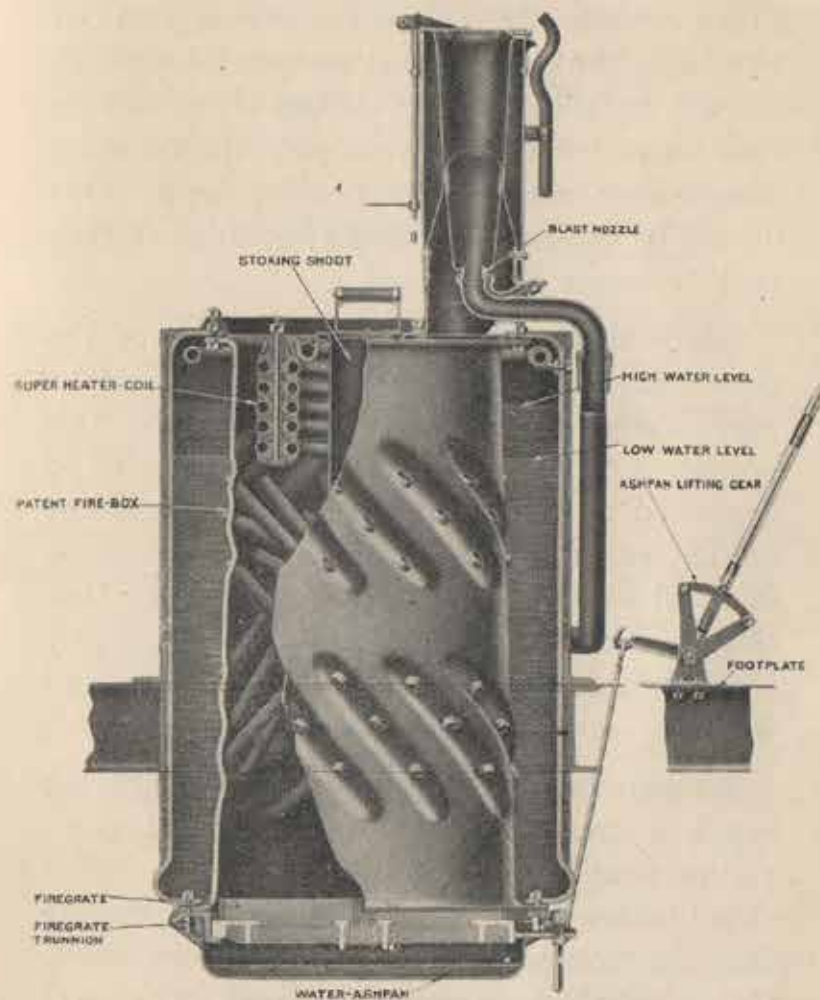
entirely. Allow boiler to cool gradually or the tubes will leak. While the empty boiler is becoming cold remove stoking shoot and fire-grate, then wash out thoroughly inside the boiler with clean water, inserting hose pipe in all plug holes top and bottom ; a piece of wire rope worked about through the bottom plug holes will loosen the mud and render its removal easy.

Thoroughly clean the outsides of the tubes and inside firebox, removing all soot, dust, and coke.

Cleaning by Steam Jet.—All "Super-Sentinel"

Waggons are supplied with a flexible-tube boiler-cleaning outfit, arranged to take steam from the boiler by means of two fittings. It can be used to blow either down from the stoking door or up from the ashpan. This fitting should be used once a week, both from the top and the bottom of the firebox. A pair of blank nuts will be noticed on the fitting, and these should be removed in turn when the flexible-tube is in use.

Scale in Boiler.—If you are compelled to use hard, unsuitable water, a sample (say one gallon) should be sent to a competent analyst, or direct to The "Sentinel" Waggon Works,



SECTION OF "SUPER-SENTINEL" PATENT BOILER.

Ltd., for analysis. A suitable boiler compound will then be recommended, and this should be added consistently. Dosage is best carried out by adding the proportional amount (as advised) to each tank of water. When we advise on feed water treatment, we supply the requisite composition made up in powder form. One lid full or more of this should be added to each tank of water as specified.

When treatment is supplied by us for the use of any particular feed water it should be particularly noted that the action of this powder is to soften the scale and cause it to be deposited in the form of mud and sediment in the bottom of the boiler. It is, therefore, essential in order to get the boiler clean that this mud and sediment should be frequently blown off, otherwise, of course, the compound will not serve any useful purpose.

We have had a number of cases where having supplied treatment, we have received complaints that there is more mud in the boiler than before—the users seeming to imagine that the compound was not doing its work. Of course, the converse is the truth: the extra amount of mud being a clear indication that the powder is preventing it from adhering to the plates.

To Remove Firebox.—For thoroughly cleaning the inside of boiler the firebox must be lowered and all scale and deposit removed from the inside of the tubes and walls of the boiler. If pure water is used this need only be done about once a year; if very bad, hard, or dirty water is used the firebox should be lowered and cleaned every six months.

The waggon shed should be provided with a well-drained pit 3 ft. 3 in. wide by 3 ft. 3 in. deep, to permit of access to the engine, and especially the boiler firebox.

To remove firebox if there is no overhead lifting tackle handy; take off the stud cover and boiler top, remove superheater coil, fire-grate, and ashpan. Arrange a strong bar across the top of boiler shell and another below bottom flange of firebox with lowering chains between them passing down through the centre of firebox.

Take off all nuts from both top and bottom joints and gently lower firebox, starting it by tapping with a heavy hammer, taking care to have a hardwood buffer between hammer and top of firebox. It may be found necessary to part the joints by

driving in, say, half a dozen thin wedges at various points round the circumference.

SPECIAL CAUTION.—Never take hold of the tubes or hit or strain them in any way when lowering or lifting firebox.

Fusible Plug in Firebox.—This must be removed for inspection and cleaning at least once a quarter.

Boiler Joints.—With care the large joints at top and bottom will last a long time. Before replacing firebox always smear sides of each joint with graphite and grease, and before bolting up see that no dirt is on joints or metal surfaces.

All bolts and nuts should be smeared with a good graphite grease before nuts are replaced. If this is done there will be no trouble experienced in removing nuts even though they have been subjected to the high temperature of the gases for twelve months. Ordinary grease is useless for this purpose.

Boiler Mountings.—Pass a wire through all passages in water gauge fittings weekly, if dirty water is being used. Examine check valves and clean out deposits if any. Remove pressure gauge pipe at intervals and

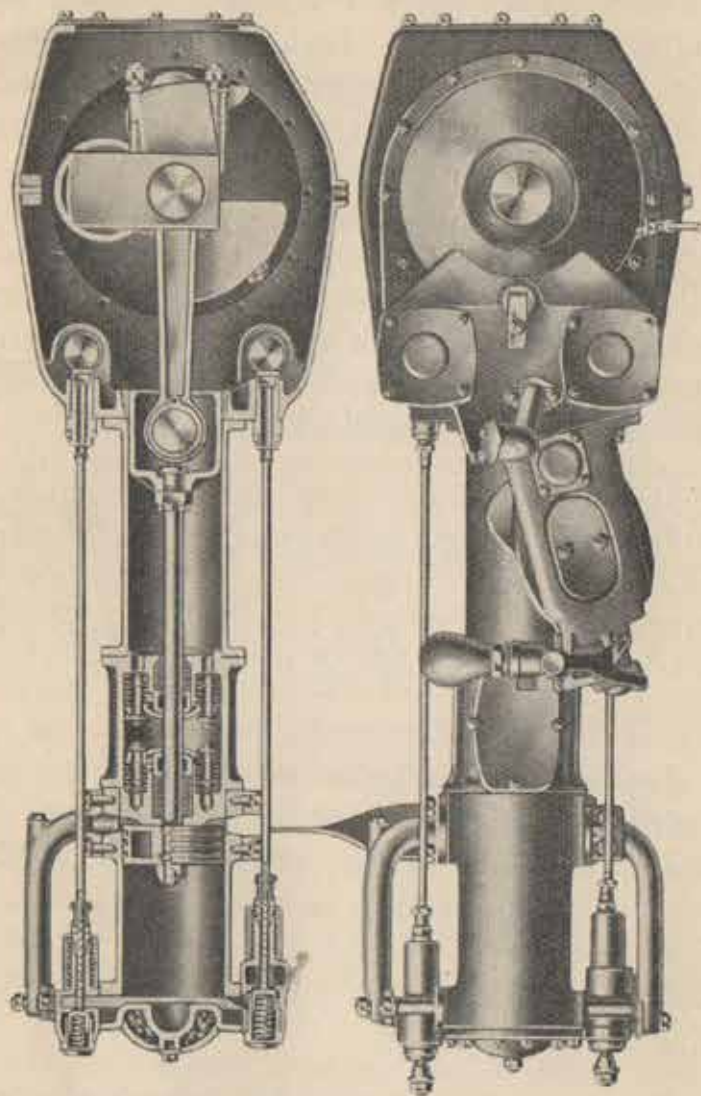
see that it is clear. Test safety valve daily by allowing it to blow at 230 lbs., and re-grind valve when required. Pack the steam regulator gland, when necessary, with suitable packing, and re-grind all the steam valves if they leak, however slightly.

Engine.—During the first week's running adjust all piston rod and pump ram glands every other day; afterwards examine them weekly to see that they are tight. Pack when necessary, using "Sentinel" Packing.

It must, of course, be realised that entirely different packings are required in the steam and oil glands respectively. We supply a proper grade of packing for each place, clearly marked, and care should be taken that these are not mixed up.

Packing glands should be screwed up very lightly. To force them down is to put an excessive load on the rods. This causes undue friction and tears the packing away. The packing should be screwed up a little tighter than would be possible by use of the finger and thumb.

When a new waggon has completed 500 miles all the oil should be drained off; the



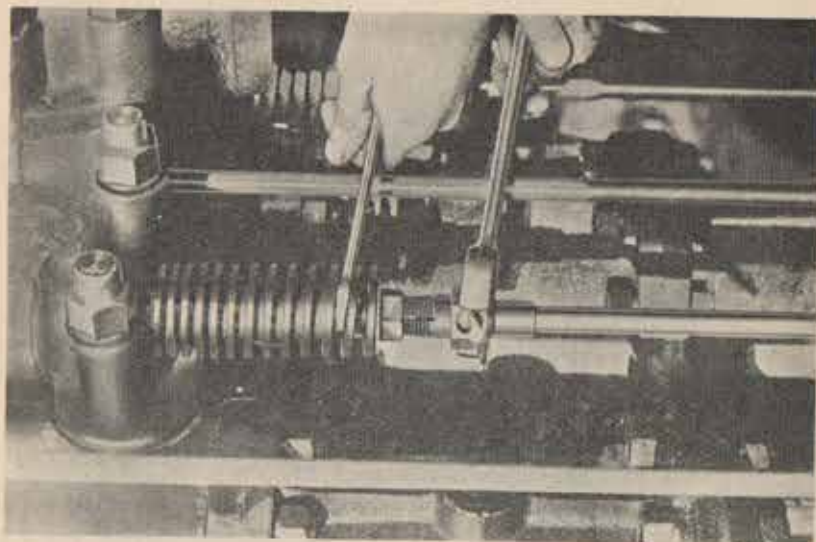
THE "SUPER-SENTINEL" PATENT ENGINE.

crankcase rear door removed and the crankcase chamber thoroughly wiped out. After the door is replaced the crankcase should be filled again with clean oil; this procedure should be repeated subsequently three or four times a year. The oil taken out can be used for lubricating the driving chains.

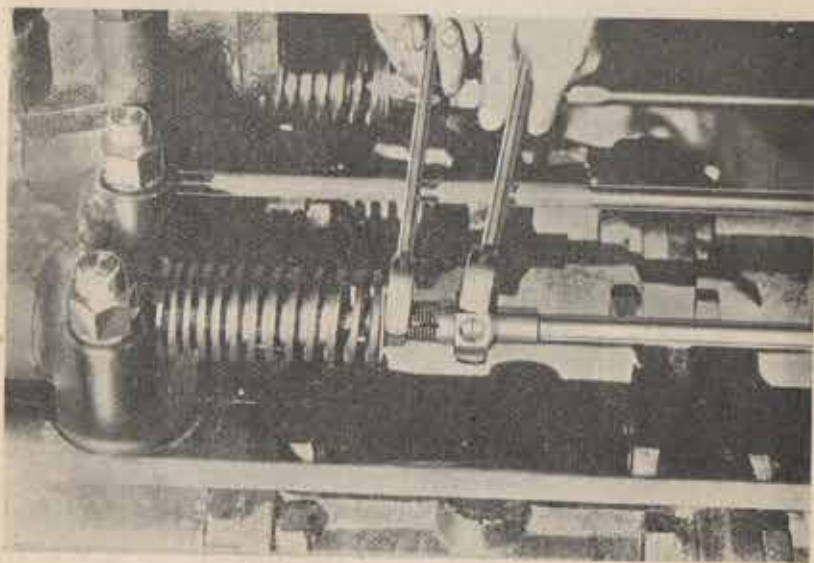
Taking Up the Brasses.—Provision is made for $\frac{1}{8}$ in. clearance between the piston and front cylinder cover and $\frac{3}{8}$ in. between the piston and the back cover. After the brasses have been taken up two or three times the clearance between the piston and the back cover should be measured. This should never be less than $\frac{3}{8}$ in. When the clearance has been reduced to this, shims, or thin packing plates, should be placed between the crank pin bush and the foot of the connecting rod.

Testing Engine Valve Setting.—Do not meddle with this while all goes well, but if the engine "thumps" when running wait until the engine is cold, and then test valves as follows:—

First inspect and tighten all reversing gear joints to see there is no play here, or where levers are fixed to shafts.

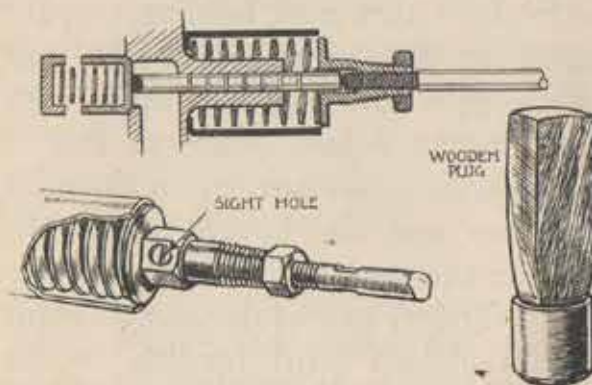


TESTING TAPPET CLEARANCES.



LOCKING TAPPET-ADJUSTING NUTS.

To time engine valves keep reversing lever in "Start" notch and remove driving chains. While your assistant turns engine crankshaft with a spanner on chain pinion nut on right-hand side of waggon tending to screw it on—try if all valves are properly seating. This is done by observing the clearance between valve stem tappets, through holes in latter, when tappet is as far into crankcase as it will go.



Engine valve details indicating clearance adjustment and method of holding the valve for grinding it in.

From Vehicle 5,000 to about Vehicle 5,800 the actual lift of the steam cams was only $\frac{3}{16}$ in., so that on these Waggon it is advisable to keep the clearance fairly low. When cold the clearance should be, say, between .006 and .012 ins. All subsequent Waggon are provided with cam shafts having $\frac{1}{4}$ in. lift so that

from about No. 5,801 the clearances are not critical. When cold they may be from .005 in. or .006 in. to $\frac{1}{32}$ in. This will not interfere with the working of the engine as the valve will still have more lift than on the earlier waggons with the minimum clearance.

If there is too much or too little clearance this should be remedied by the adjustment provided on tappets. To do this, slack off lock nut on tappet, and turn rod until clearance is correct, then tighten lock nut, holding tappet with a spanner on flat provided. Make quite sure that tappet is not being held up by cam before attempting to adjust. Having seen that all valve clearances are correct, remove left hand trunk door and also covers from both steam valves on the same cylinder (the valves on top of the cylinder) and while your assistant slowly turns crankshaft (still tending to screw on pinion nut, right hand) watch piston rod. As it reaches the front end of its stroke, the steam valve (the outside valve that end) should open. If engine be cold, steam valve should open from $\frac{1}{8}$ in. to $\frac{1}{4}$ in. before end of stroke.

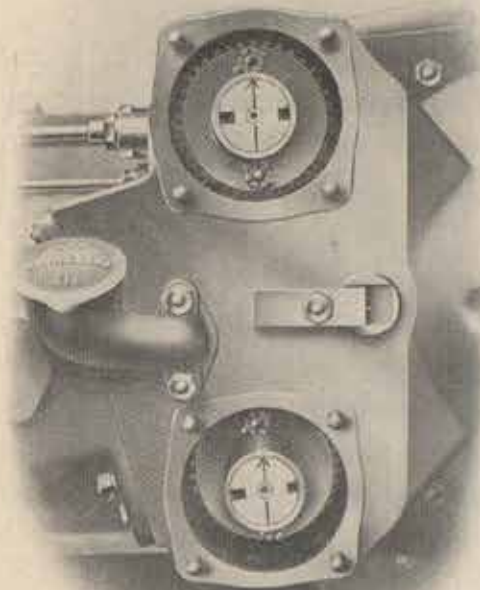
To find out the moment it opens, place your finger inside the valve and try to turn it; while on its seat you can hardly do so, but immediately it opens the valve is very easily turned.

A feeler gauge of correct thickness will be found inside back cover of this book.

Fitting Valve Chest Joints.—If it is found necessary either to fit a new valve chest or to remake the joints, great care should be taken to see that only thin jointing material is used. It should not be more than $\frac{1}{32}$ in. thick. It is as well to use a fairly hard jointing and coat the faces with gold size. Soft material is likely to squeeze out when subjected to the heat of the steam, and this is liable to distort the cylinders. Once the chest has been off it is necessary to check over the valve clearances, as there is $\frac{1}{8}$ in. clearance in the stud holes which fix these chests.

Cam Shafts.—A definite stop is provided in the engine for each end of the cam shaft. When adjusting reversing gear connections, it is only necessary to see that the cam shafts are hard against one stop when reversing lever is in the "forward start notch"; and hard against the other when the reversing lever is in the "reverse notch."

In order to make the setting of the valve gear as easy as possible, each of the two cam shafts are marked with an arrow on the gear



end. When re-timing after an overhaul, or when fitting new cam shafts, it is only necessary to turn the crank-shaft so that the left hand crank is on inner or crank-end dead centre, and then set the cam shafts so that both arrows are pointing upwards. The cam shaft driving

wheels may then be slid into mesh.

NOTE.—There are two slots or key-ways in the ends of the cam shafts (for manufacturing reasons), but only one of these is of sufficient depth to take the driving key, so that no mistake can be made.

Chain Adjustment.—This is carried out by means of the left and right hand screws on the radius rods. Care must be taken that both rods are

adjusted exactly alike, and this is best determined by measuring from centre to centre of radius rod pins.

Removing and Fitting Chain Pinions.—If it be desired to remove one or both of the chain pinions, both driving chains should be taken off. A ring spanner (which is provided) should be placed on the hexagon portion on the chain pinion to be removed, and a stout block of wood should be placed underneath the end of the spanner in order to prevent it from turning while the chain pinion nut is being unscrewed. This applies also to the fitting of a new chain pinion. It prevents strain on the keys of the differential gear inside the crank-shaft. If this precaution is not taken, the nut and keys of the gears inside the crank-case may loosen.

Water Tank.—Remove the manhole door and wash-out plugs in bottom at intervals according to the quality of water used, and wash out all deposit with a hose.

Water Filters.—Clean Monthly. Remove covers and take out mantles, cleaning these thoroughly with hose pipe.

Bearing Spring Fastenings.—It is, of course, necessary that the front and rear axle springs

should be kept firmly clamped in position. Once or twice during the first fortnight, after the waggon has started running, and monthly afterwards, the nuts on the front and rear spring clamp bolts must be screwed hard down if they are found to be in the least degree loose. They must only be tightened when the waggon is unladen.

Proper Care of Rubber Tyres.—Don't let the tyres stand in oil or grease.

Have minor injuries, cuts or flats repaired promptly, as neglect will make them grow worse.

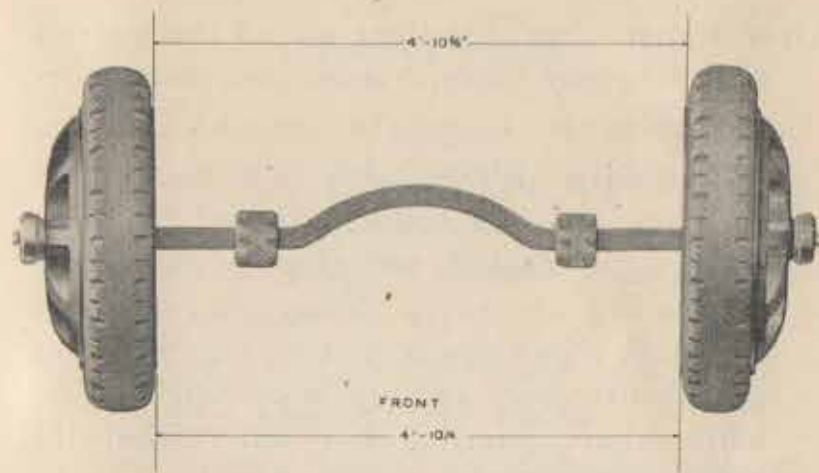
Take care not to run on tramway rails, points or crossings.

Do not drive over loose road metal, or edges of kerbstones, etc. If you must, then drive very slowly.

Don't apply brakes very suddenly, except in an emergency.

Wheels should be tested periodically to see that they are in correct alignment with the chassis and with each other. Front wheels should be from $\frac{1}{4}$ in. to $\frac{3}{8}$ in. wider at the back than in the front, for when running the wheels tend to go out at the front.

A diagram showing exactly how to test the alignment is given on the opposite page.



Frosty Weather.—If there is no heating apparatus in waggon shed during frost the following precautions must be taken to avoid burst pipes, etc. :—

Empty water tank by removing plug in bottom. Open engine drain valve. Remove pump delivery valve and take out plug in bottom of valve chest, and the one at the bottom of ram cylinder, also the plug in bottom of steam pipe below engine cylinders. The boiler must be emptied if fire cannot be damped and kept in.

On waggons having hydraulic tipping gear the hydraulic cylinder and the steam pump (or injector) must be carefully drained and all cocks left open.

After Frost.—See that there are no obstructions of ice in any pipes, valves, etc., before re-starting.

The water delivery pipe from feed pump to check valve on boiler is one of the most likely to be choked, and may be thawed by dismantling at pump, closing shut-off valve on boiler, removing check valve, then replacing check valve cover and gently opening shut-off valve, thus admitting hot water from the boiler to this pipe.

Hints on the Choice of Fuel and Stores.

The fire box is suitable for burning either wood, coke or Welsh coal. We recommend that, by preference, Welsh coal should be used wherever the same is readily obtainable at a reasonable price.

Coke.—We ourselves use gas coke with quite satisfactory results. Keep the fire thick and use wide-spaced bars ($\frac{5}{8}$ in.).

Coal.—We recommend "Windber," "Penrykyber," or a similar Welsh coal. Anthracite is unsuitable, as it soon gets reduced to powder and clogs the grate. Coal should be used in small lumps, and the fire must be kept about 6 in. thick.

Traffic Rules.

1. Drive on left or near side of the road
2. A vehicle is under "Town control" when it can be stopped in about 30 ft., and under "Close control" when it can be stopped in about 10 ft.
3. Vehicles in crowded traffic must always be driven under "Close control."
4. In turning corners to the right, curve out wide; turn those to the left close to the kerb, both under "Close control." Whenever the driver's view is limited, his control of his machine should be so complete that he can pull it up within half the distance that he can see ahead of him.
5. Vehicles meet—driver's right arm to driver's right arm.
6. Overtake on right or off side only.
7. Overtaking demands special care on the part of the driver of the overtaking vehicle. Give proper warning and overtake without undue delay.
8. When necessary to overtake at corners, bends in the road, crossings or street refuges, extra caution is required.

9. Meet or overtake a led animal so that the person in charge is between you and the led animal.
10. Go down hills under "Town control."
11. **Hand and Police Signals.**—The recognised hand and police signals are fully illustrated on the following pages. Drivers should take care to make signals quite deliberately and distinctly, so that they cannot be misunderstood.

Police Signals.



Fig. 1. Police Signal:
"Come on."



Fig. 2. Police Signal:
"Stop" to vehicles approaching simultaneously from behind and in front.



Fig. 3. Police Signal:
"Bringing on a vehicle."
See Fig. 5 for completion of movement.



Fig. 4. Police Signal:
"Stop" to vehicles approaching from behind.



Fig. 5. Police Signal:
"Bringing on a vehicle."
Completion of movement shown in Fig. 3.



Fig. 6. Police Signal:
"Halting a vehicle" approaching from the front.

Hand Signals.



Fig. 7. Driver Signal: "I am turning to the left."



Fig. 8. Driver Signal: "Come past me on my right."



Fig. 9. Driver Signal: "I am turning to the right."



Fig. 10. Driver Signal: "I am going to slow down."

Hand Signals—continued.

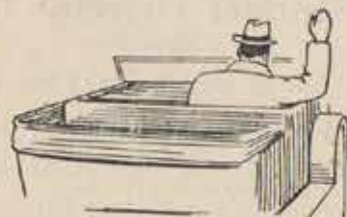


Fig. 11. Driver Signal: "I am going to stop."

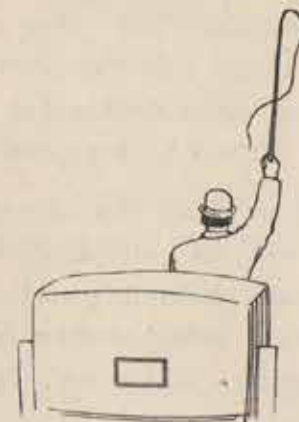


Fig. 12. Whip Signal: "I am going to turn."

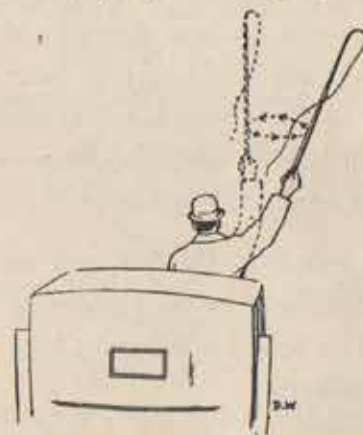


Fig. 13. Whip Signal: "I am going to stop."

The Sentinel Drivers' Club.

Now in its fifth year of existence, the Sentinel Drivers' Club has done much towards making the job of driving a Sentinel Waggon a more congenial one. The Club was founded with the object of helping the driver, making his work more easy and pleasant, and showing that the waggon makers are prepared to give him all the advice they can. How far these aims have been realised can be gauged from the fact that there are now over five thousand Members of the Club, all of whom are either drivers or stokers of Sentinel or Super-Sentinel Waggons.

Every *bona fide* driver of any Sentinel vehicle is entitled to Membership, and to wear the badge which is presented to him upon enrolment. Each Member periodically receives books and leaflets in which are published hints and advice of great value to the Sentinel driver. Interesting and instructive accounts of the doings of other Club Members are also collected and published, promoting a competitive spirit which is responsible for the greater pride and keenness shown by the Club Member in his calling. This and the surety of help from any other Member of the Club when in trouble on the road, the camaraderie and good advice, all help to make the Member of the Sentinel Drivers' Club more interested in his job.

If you are not already a Member, and would like to know more about the Club, ask for an enrolment card, addressing your enquiries to The Sentinel Drivers' Club, Sentinel Waggon Works, Ltd., Shrewsbury.

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