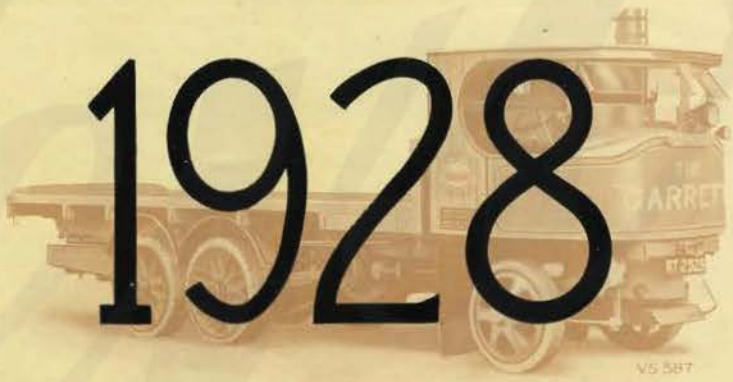
No. 950

RIGID SIX WHEEL STEAM WAGON.

RICHARD GARRETT & SONS LTD

1904

TO



1928

QUARTER OF A CENTURY OF
PROGRESSIVE STEAM WAGON MANUFACTURE

BY

RICHARD GARRETT & SONS Ltd.

Established 1778

ALDWYCH HOUSE, LONDON, W.C. 2.

WORKS : LEISTON, SUFFOLK, ENGLAND.

ASSOCIATED WITH AGRICULTURAL & GENERAL ENGINEERS LTD.

ESTABLISHED OVER 150 YEARS

THE ORIGIN OF THE RIGID SIX-WHEEL STEAM WAGON.

It was in January, 1926 (two and a half years ago), that we first conceived the idea of building a Rigid Six-Wheel Model of the "Garrett" Undertype Steam Wagon and the possibilities which would result therefrom in reducing transport costs.

The first wagon was put in hand in March, 1926, fitted with side tipping body and this wagon was thoroughly tested out in actual service by one of the largest County Council Authorities in this country.

From the results obtained from these trials we gained much useful experience, and after certain modifications had been made the vehicle was then fitted with standard flat platform body, and further trials with this wagon took place both at our Works and also (under our own supervision) in the service of actual users of heavy haulage vehicles. At the conclusion of these tests we felt that we had collected sufficient data to prove our claims that the Rigid Six-Wheeler was the coming vehicle of the future.

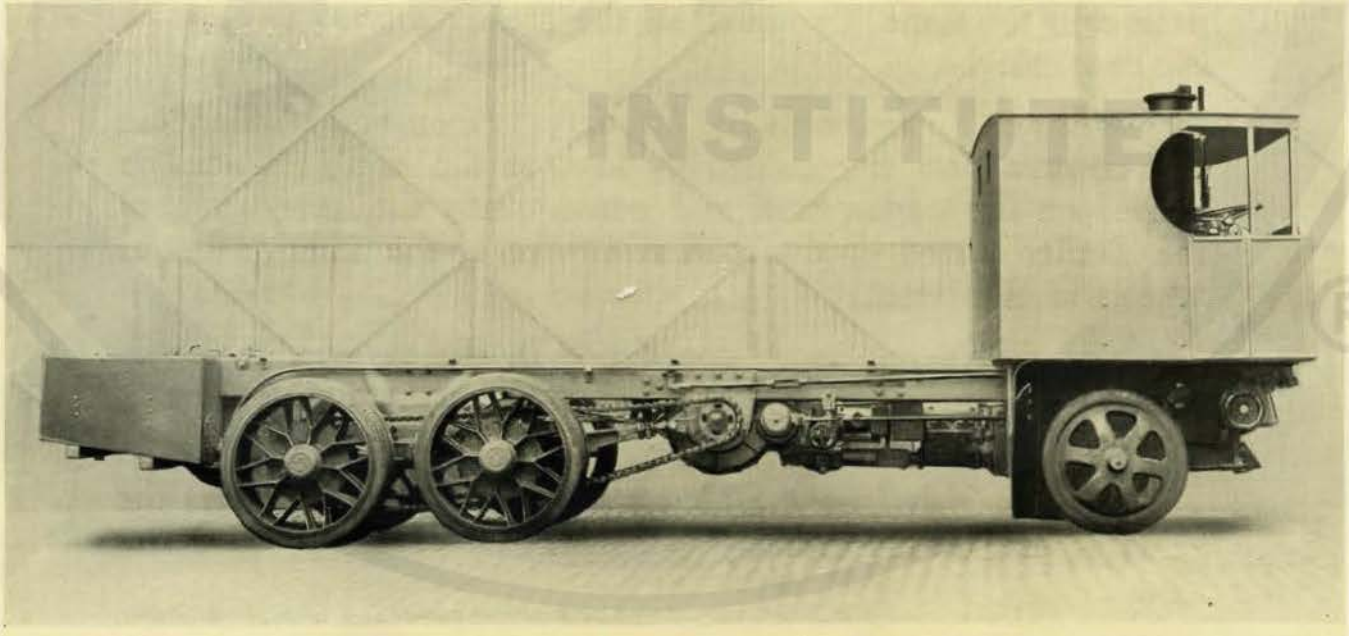
It must be remembered at this time that there were no Rigid Six-Wheel Steam Wagons on the roads in this country, and consequently the vehicle had no legal status.

The task of proving our claims direct to the Ministry of Transport and also through the Society of Motor Manufacturers and Traders occupied several months, and it was not until the publication of the Heavy Motor Car Amendment Order, dated July 29th, 1927, that a definite legal position was given to the Rigid Six-Wheeler and the question of unladen weights and axle weights finally settled.

During this time much care and attention was given to perfecting the design, with the result that the " Garrett " Rigid Six-Wheeler as supplied to-day is as near perfection as it is possible to make any heavy haulage vehicle.

In the pages of this catalogue we have endeavoured to put before the reader some of the advantages of the Rigid Six-Wheeler, the manner in which operating costs can be reduced, the special features of the " Garrett " and some opinions of actual users.

There will, of course, always be cases where it is necessary to use a four-wheeled vehicle, with a short wheelbase, but in the interests of economy alone all users and prospective users of heavy haulage vehicles should not delay in trying out the " Garrett " Rigid Six-Wheeler.



WHY IT PAYS TO USE A RIGID SIX-WHEELER.

It has been proved that despite the increase in size, larger load carrying capacity and greater unladen weight, the Rigid Six-Wheeler does less harm to the roads than the ordinary four-wheel vehicle.

Here is a vehicle, therefore, which whilst possessing this important characteristic, will from the purchaser's point of view, carry double the load of the ordinary 5/6 wagon at very little additional cost.

Although rated to carry a 10 ton load, the "Garrett" Rigid Six-Wheeler has a very large margin of overload capacity and in many cases does away with the necessity for using a trailer, thereby decreasing the time taken for each journey. A trailer carrying an additional 4 tons can, however, be comfortably used if desired.

The same amount of labour is required to handle the Wagon and despite the fact that the load is double, the fuel consumption is practically the same, by reason of the greater driving force from the rear axle bogey.

When compared with the ordinary Wagon and Trailer, the fuel consumption is considerably less, as the combined load is carried on the wagon itself and consequently the heavy drag of the Trailer caused by the road resistance of the additional four wheels is eliminated.

The driver has more confidence in his vehicle, which is driven on all four rear wheels and on which there are three sets of independent brakes—hand, foot and steam operated.

In the British Isles the tax on the Rigid Six-Wheeler is the same as that on the ordinary 6-tonner.

RICHARD GARRETT & SONS LTD

CAN TRAVERSE SOFT GROUND WHICH WOULD BE IMPOSSIBLE WITH A FOUR-WHEELER.

HERTS GRAVEL & BRICKWORKS LTD.,

General Office & Works:
TWENTIETH MILE,
WELWYN GARDEN CITY, Herts,

Messrs. Richard Garrett & Sons, Ltd.
Aldwych House,
Aldwych, W.C. 2.

23rd August, 1928.

Dear Sirs,

We have pleasure in writing to tell you how pleased we are with the performance of the new "Garrett" Rigid Six Wheeler Undertype Steam Wagon.

As you are aware, we have quite a large fleet of your 8-ton 4-wheeler Undertype Steam Wagons, with which we are very satisfied, **but find a great saving in the running costs of the Six-Wheeler, as compared with the 4-wheeler and trailer, our coal consumption being reduced by 25%.** It also has this great advantage; that we are able to get on to building sites (where the ground is soft) **where it would be quite impossible to get on with the 4-wheeler and trailer.**

We shall have no hesitation in recommending this vehicle to our friends requiring this type of Wagon.

Yours faithfully,
For HERTS GRAVEL & BRICKWORKS LTD.
(Signed) W. HALL, General Manager.

ESTABLISHED OVER 150 YEARS

A WORKING COST SHEET FOR A "GARRETT" RIGID SIX-WHEELER.

In order to gauge to what extent you could reduce your present transport or haulage costs in your own business by the introduction of one or more "Garrett" Rigid Six-Wheelers, we are setting out a typical example of an annual working cost sheet.

The figures shown are only intended to serve as a guide and to enable you to transpose them to suit your own particular conditions of working.

It must be remembered that the figure of 3.2 pence per ton mile is calculated on the Wagon running loaded one way only. If return loads are available the cost will be halved, which would show the extraordinarily low figure of 1.6 pence per ton mile.

Again, the weight carried for each journey is shown at 10 tons, whereas the Wagon has a very large overload capacity.

Lastly, the Wagon is capable of taking, when required, a 4-ton trailer, which would considerably increase the load and only require a very small additional amount of fuel.

Assumed Duty. A Garrett Rigid Six-Wheeler fitted with flat platform body, loaded with 10 tons, making 2 journeys per day, each journey 30 miles, loaded one way only, working 5 days per week, 50 weeks per annum.

Standing Charges (per annum).

Interest on capital @ 5% p.a. on £1150 ...	£57	10	0
Depreciation @ 10% p.a. on £1150 ...	115	0	0
Tax @ £60 p.a.	60	0	0
Insurance @ £30 p.a.	30	0	0
Wages ... £350 p.a.	350	0	0

Running Charges (per annum).

Fuel, 18 miles per cwt., @ 2/3d. per cwt. ...	£93	15	0
Lubricating Oil, ·6d. per mile	37	10	0
Tyres £185 per set of 10 for 15,000 miles ...	185	0	0
Maintenance, @ 1d. per mile	62	10	0
Extras—Waste, grease, etc.	10	0	0
Total operating cost per annum	£1001	5	0

Tons hauled	5,000
Miles run	15,000
Loaded miles	7,500
Ton miles	75,000

Loaded One Way Only.

	s.	d.
Cost per ton	4	0
Cost per mile	1	4
Cost per loaded mile ...	2	8
Cost per ton mile ...	0	3.2

Loaded Both Ways.

Cost per ton	2	0
Cost per mile	0	8
Cost per loaded mile ...	1	4
Cost per ton mile ...	0	1.6

WHAT THE "GARRETT" RIGID SIX-WHEELER WILL DO.

A typical example of a day's work with a "Garrett" taken from particulars kindly supplied by Messrs. Martin & Sillett of Rochester, Kent:

Depart from Strood Wharf at 6 a.m. for Holborough Cement Works, 5 miles distant, load there with **14 tons of cement** and journey to Farnborough (Hampshire), a distance of 70 miles, unload there and return to Strood light, arriving back at 6.30 p.m.

Total time for day's work **12½ hours.**
Total time taken for loading and unloading 2¼ hours.
Stops for water and meals 1¾ hours.
Actual running time **8½ hours.**
Total mileage for complete run 150.

ESTABLISHED OVER 150 YEARS

104 MILES IN 7 HOURS.

Another remarkable performance with a "Garrett" Rigid Six-Wheeler is shown by the following particulars kindly supplied by The Marley Tile Co. Ltd., Harrietsham, Kent:

Load overnight with 12 tons of tiles and leave Harrietsham at 4 a.m.

Start out to Bexhill-on-Sea via Tunbridge Wells, unload at Bexhill-on-Sea, and reload with another **12 tons of tiles,** proceed to Eastbourne, unload there and return to Harrietsham light, via Mayfield and Tunbridge Wells, arriving back at 7 p.m.

Total time for day's work **15 hours.**
Total time taken for loading and unloading 6¾ hours.
Stoppage for meals and water 1¼ hours.
Actual running time **7 hours.**
Total mileage for complete run 104.

ON DESIGN GENERALLY.

When selecting any particular make of Wagon, a very important factor which the purchaser must always take into account is whether the firm whose offer is under consideration really manufacture the whole vehicle or whether they merely assemble the component parts supplied to them by various outside firms.

If the firm in question actually manufacture all of the various components, then the purchaser may feel sure that the whole of the vehicle during the process of manufacture is under their own supervision from start to finish, consequently that proper care and attention can be given to every detail, which is not the case when important parts of the Wagon are manufactured by outside firms.

It can literally be said that

THE WHOLE OF THE "GARRETT" RIGID SIX-WHEELER IS MANUFACTURED AT LEISTON WORKS.

There are, of course, a few exceptions in the case of proprietary articles, such as some of the steam fittings, the tyres, driving chains, etc., but these are a very small percentage of the vast number of parts which comprise a Steam Wagon.

FORWARD STEERING POSITION FOR THE DRIVER.

The point has sometimes been raised when discussing the advantages of the Steam Wagon over other types of heavy haulage vehicles that the position of the funnel is inclined to obstruct the driver's view of the road in front of him.

On the "Garrett" Undertype Steam Wagon the driver has always had a clear and uninterrupted view of passing and oncoming vehicles, but in the case of the Rigid Six-Wheeler we have thought it advisable to improve this still further by advancing the driver's seat to a position alongside the boiler instead of in rear and slightly to the side of it. In this new position the driver has a decided advantage, as in addition to this excellent view

ALL OF THE CONTROLS ARE IN A CONVENIENT POSITION FOR OPERATING THE WAGON WITH THE GREATEST EASE.

The fireman's position remains the same, that is to say, just behind the boiler and slightly to the left-hand side, in the most convenient position for stoking purposes.

VERTICAL WATER TUBE BOILER.

The Boiler is of the Vertical Crosstube Type designed for a working steam pressure of

250 LBS. PER SQUARE INCH.

A full head of steam can be maintained with the utmost freedom on coal or coke fuel owing to the exceptionally large

GRATE AREA OF 4.27 SQUARE FEET and HEATING SURFACE of 63.59 SQUARE FEET.

The cleaning of the boiler is the work of

2 to 3 HOURS

by simply removing the large inspection door which is fitted in the front of the Boiler shell, thereby leaving all the tubes easily accessible for cleaning, expanding or withdrawing. The Boiler is fired from a chute

DIRECTLY IN FRONT OF THE STOKER

on a level with the footplate.

Incorporated in the design of the Boiler is an efficient superheater situated in the smokebox. The superheater itself is manufactured from solid drawn steel tubes expanded into cast steel headers and is of sufficient surface to superheat steam up to an additional 100 degrees F.

A PRESSED STEEL FRAME.

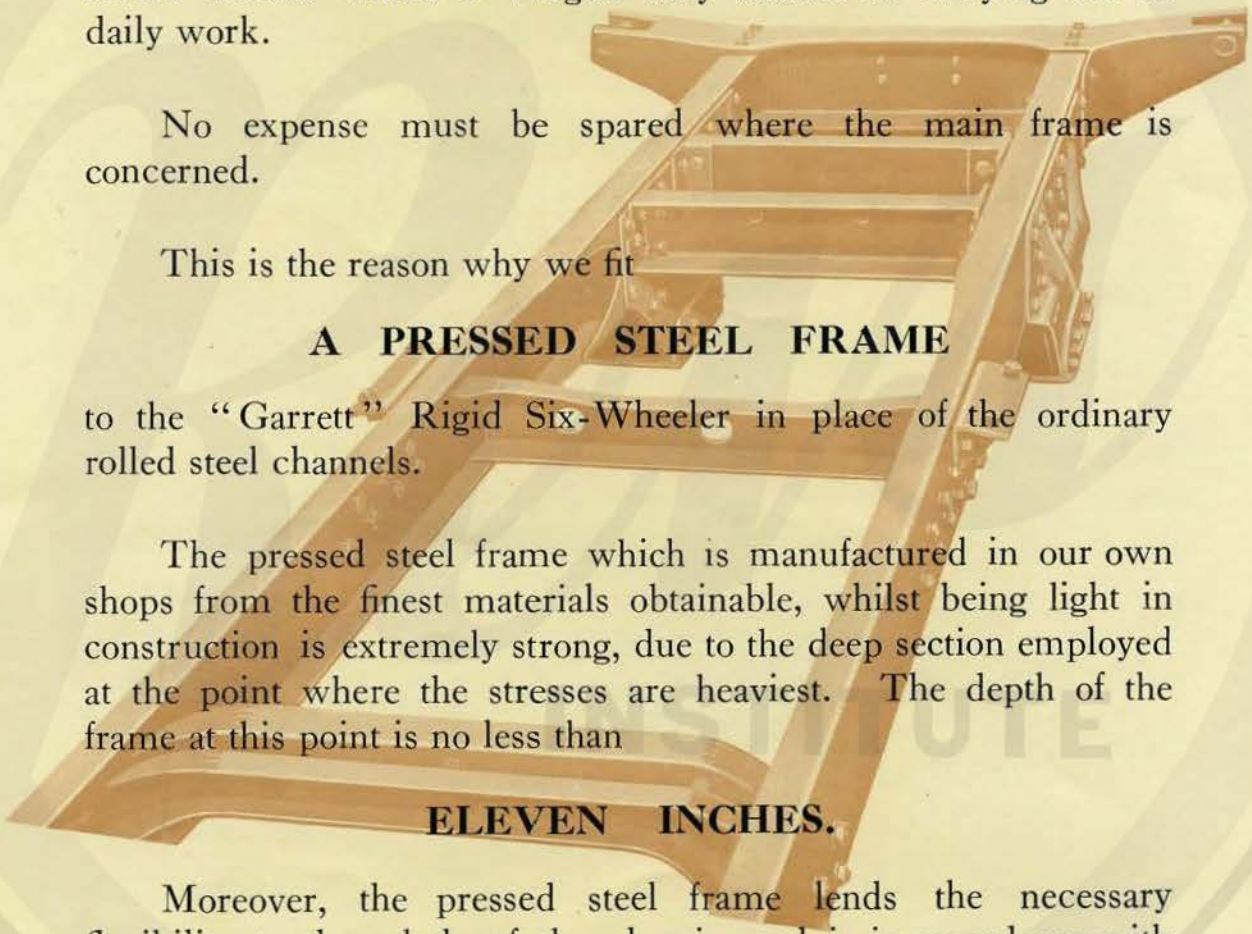
The main frame of the Wagon has to carry the whole of the load, and must, in addition, be capable of withstanding all the severe shocks which a Wagon may sustain in carrying out its daily work.

No expense must be spared where the main frame is concerned.

This is the reason why we fit

A PRESSED STEEL FRAME

to the "Garrett" Rigid Six-Wheeler in place of the ordinary rolled steel channels.



The pressed steel frame which is manufactured in our own shops from the finest materials obtainable, whilst being light in construction is extremely strong, due to the deep section employed at the point where the stresses are heaviest. The depth of the frame at this point is no less than

ELEVEN INCHES.

Moreover, the pressed steel frame lends the necessary flexibility to the whole of the chassis, and is in accordance with the best modern chassis design.

ROLLER BEARINGS THROUGHOUT.

Since the first "Garrett" Undertype Steam Wagon was produced, the fitting of roller bearings throughout has been a special feature. This practice has been continued with the Rigid Six-Wheeler.

Adjustable roller bearings are fitted to

FRONT ROAD WHEELS

FOUR REAR ROAD WHEELS

CRANKSHAFT AND COUNTERSHAFT.

with the result that friction is reduced to a minimum, the fuel consumption is less and the speed at which the vehicle is able to travel is considerably increased.

The bearings themselves are of ample proportions for taking exceptionally heavy loads, and are designed to **withstand severe or exceptional shocks.**

Under ordinary working conditions the vehicle can travel many thousands of miles without the bearings being adjusted. All that is necessary is to look over the bearings once a week to see that they have a sufficient supply of grease.

THE TWO-SPEED GEAR.

We have never departed from our original practice of fitting a two-speed gear in the "Garrett" Undertype Steam Wagon.

OVER A PERIOD OF MANY YEARS THIS HAS BEEN FOUND TO BE INVALUABLE.

In numerous testimonials we have received the two-speed gear is specially mentioned.

For working over soft ground, in and out of awkward places, in quarries, sand and gravel pits, this fitting is essential.

There is nothing therefore in the nature of an experiment about the two-speed gear on the "Garrett" Rigid Six-Wheeler.

The gears themselves which are accurately machined from mild steel blanks (the teeth being case-hardened) and housed in an oil-tight casing, thus ensuring efficient lubrication and protection from all grit and dust, engage with the countershaft sprocket, from whence the drive is taken to the rear axle bogie by means of roller chains.

There is also a neutral position, which allows the pump to be driven while the wagon is standing.

REAR AXLE ARRANGEMENT.

On a four-wheel vehicle when travelling at an average speed, the rear wheels frequently leave the ground, only for the fraction of a second, but sufficient to make an impression on the road surface, which has given rise to the term "road hammer."

With the Rigid Six-wheeler this is impossible. Due to the special construction of the rear axle arrangement, the wagon glides or rolls over the ground and it will be seen clearly from the illustration shown on page 18 the manner in which both axles can swivel, thereby conforming to any indentation on the road surface, or further still when travelling over rough ground.

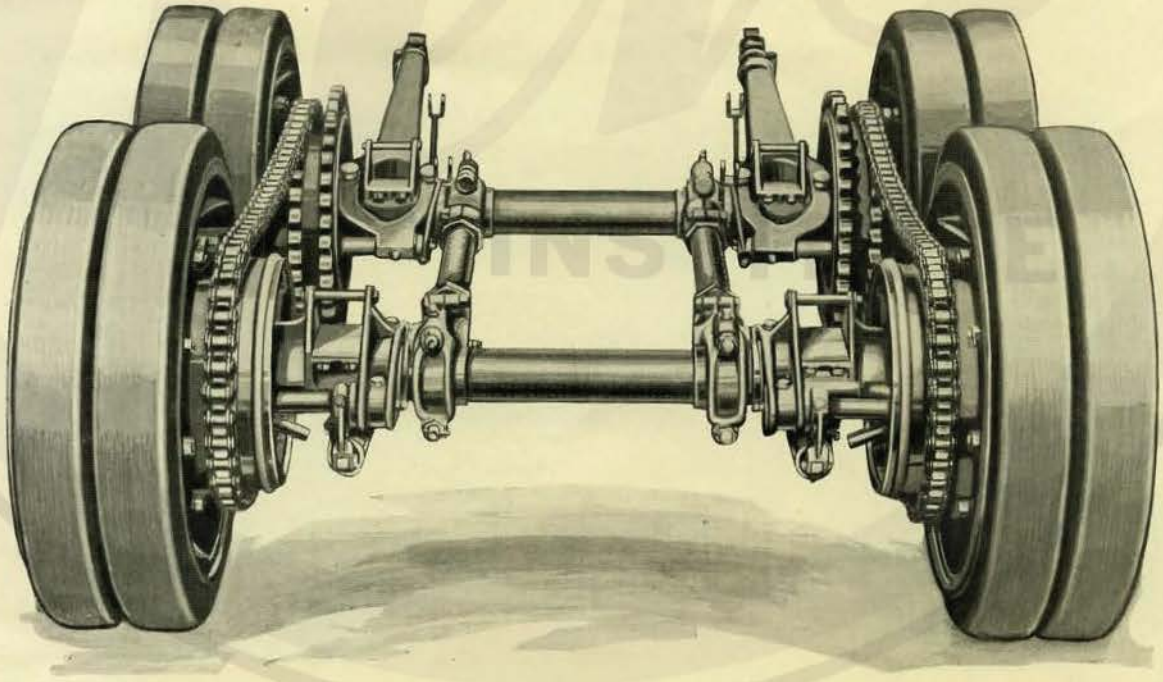
In construction the rear axle arrangement is extremely plain. We have adopted the twin axle principle as it is unreasonable to expect that as the load on this portion of the wagon is double that of the ordinary four-wheeler, one axle can do the work of two. The twin axles are fitted to one pair of inverted semi-eliptic springs, which are housed in pressed steel brackets, which in turn are bolted to the main frame side members.

REAR AXLE ARRANGEMENT.

The spring centres are contained in cast steel brackets which have ample adjustment for chain tightening and cast steel radius rods maintain the axles in position, thereby keeping the chain centres constant, whatever the position of the axles may be.

The ends of the rearmost radius rods are carried on semi-spherical bearings, similar to those used in the suspension of the engine, see page 22, with the result

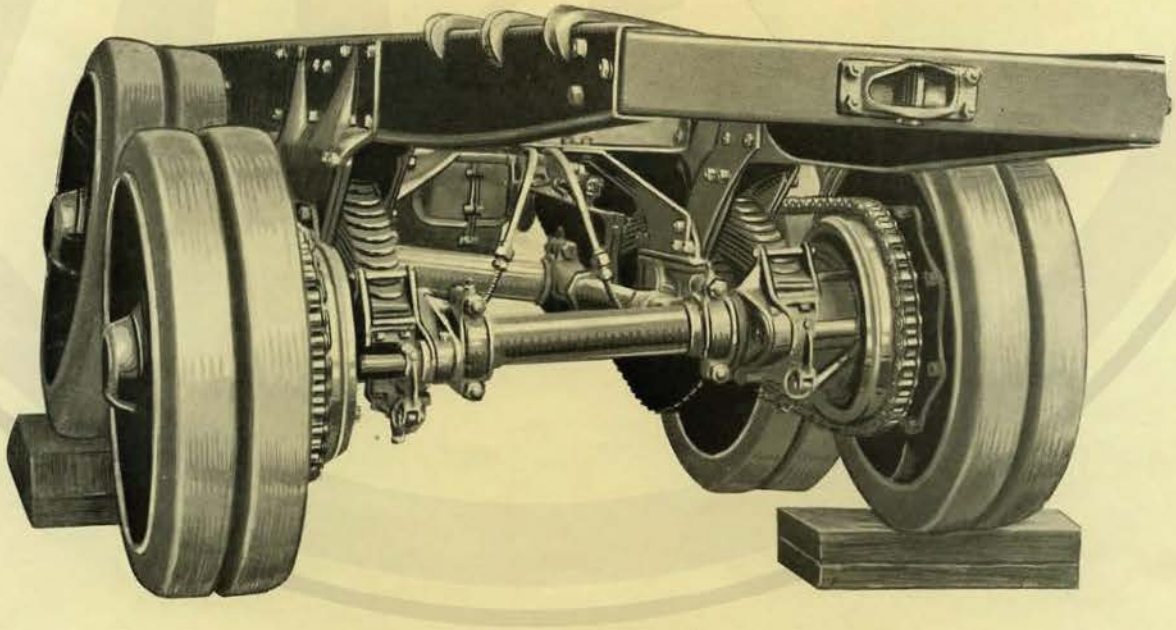
THAT EACH OF THE FOUR DRIVING WHEELS HAS A FREEDOM OF VERTICAL MOVEMENT RELATIVE TO THE OTHERS, WITHOUT CREATING ANY DISTORTION OR STRESS TO THE MAIN FRAME.



REAR AXLE ARRANGEMENT.

The illustration below shows the manner in which the main frame remains absolutely level, in spite of the fact that the forward and rearmost driving wheels are surmounting obstacles, causing the axles to swivel at different angles. Each driving wheel takes an equal share of the load, whether the vehicle is travelling over uneven ground or not.

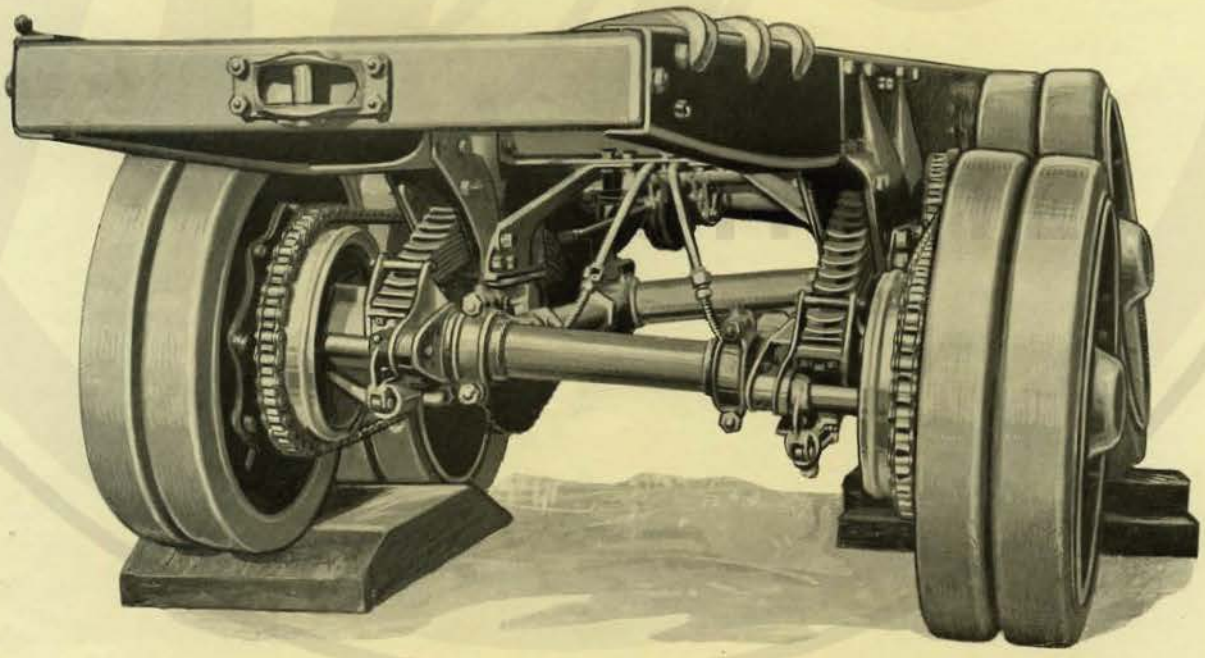
The perfect adjustment of the rear axle arrangement must be seen to be fully appreciated. On test and in actual practice vehicles of this type, loaded with 15 tons, have been driven at high speeds over the most uneven tracks and large artificial obstacles without any distortion whatsoever taking place to the frame and the position of load remaining absolutely constant.



REAR AXLE ARRANGEMENT.

There is no differential fitted in the rear axle bogey. The double chain drive is so arranged that the one differential gear which is fitted as an integral part of the engine unit functions for all four rear wheels. The drive is transmitted from the sprockets on the countershaft to the foremost rear axle by double rolled chains and from thence also to the rearmost axle by double driving chains.

ALL THE FOUR DRIVING CHAINS ARE THE SAME LENGTH AND PITCH AND ARE CONSEQUENTLY INTERCHANGEABLE.



SIZE OF FLAT PLATFORM 19'-6" × 6'-11½" (Without Tailboard)

ADDITIONAL STEAM OPERATED INTERNAL EXPANDING BRAKES CONTROLLED FROM THE STEERING COLUMN

POWERFUL INTERNAL EXPANDING BRAKES TO FIRST REAR WHEELS ONE SET OPERATED BY HAND LEVER THE OTHER BY FOOT CONTROL

PRESSED STEEL FRAME CHASSIS

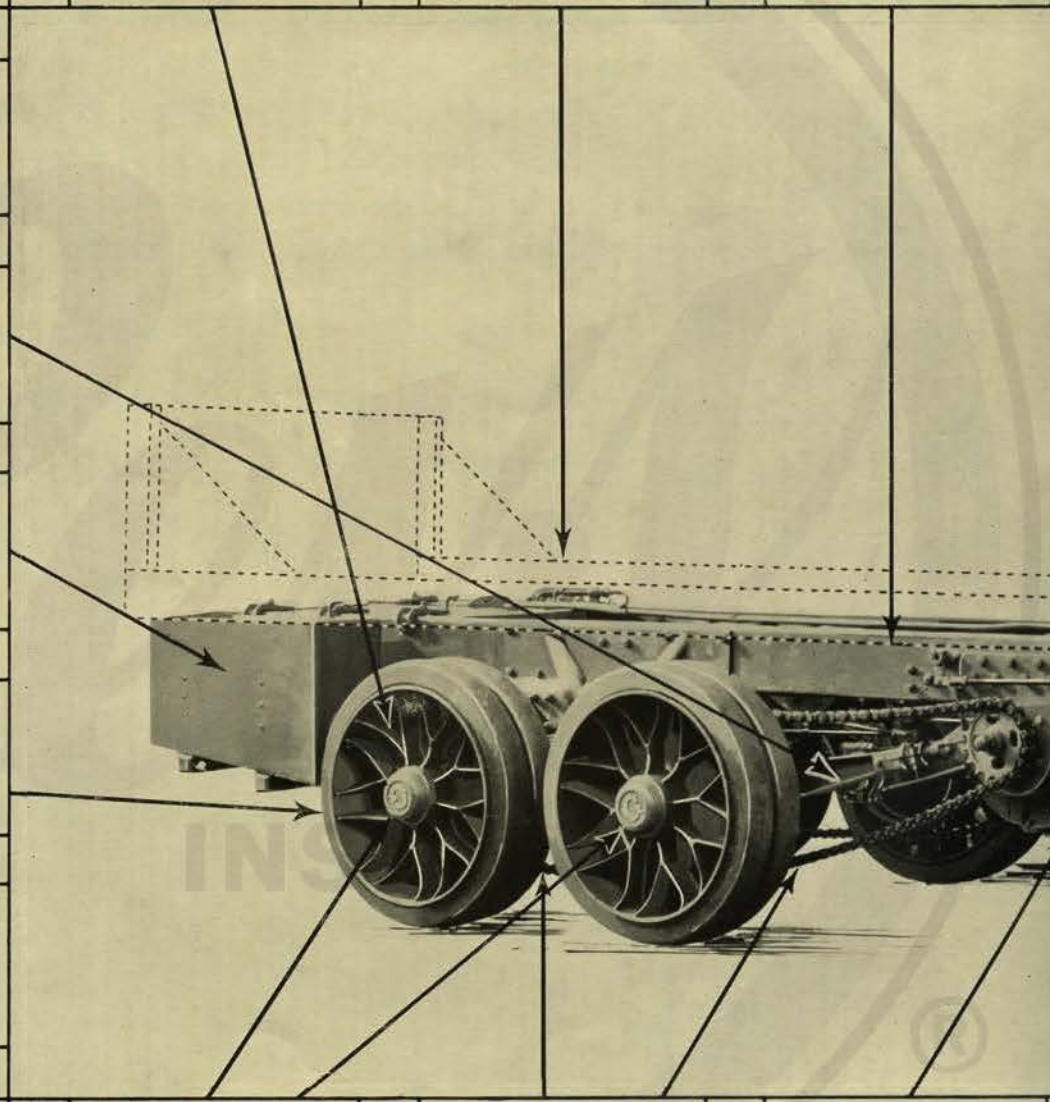
VISIBLE WATER GAUGE

STEEL RADIUS RODS WITH ADJUSTING AND EFFICIENT LOCKING DEVICE

WATER TANK 265 GALLONS

REAR TYRES TWIN 160M/M FOR 850M/M RIM

SINGLE SEMI-ELLIPTIC SPRINGS



PATENT PIVOTTED DOUBLE REAR AXLE

ADJUSTABLE ROLLER BEARINGS TO ALL FOUR REAR WHEELS

DOUBLE CHAIN DRIVE TO FIRST REAR WHEELS. SECOND DOUBLE CHAIN DRIVE TO REARMOST WHEELS

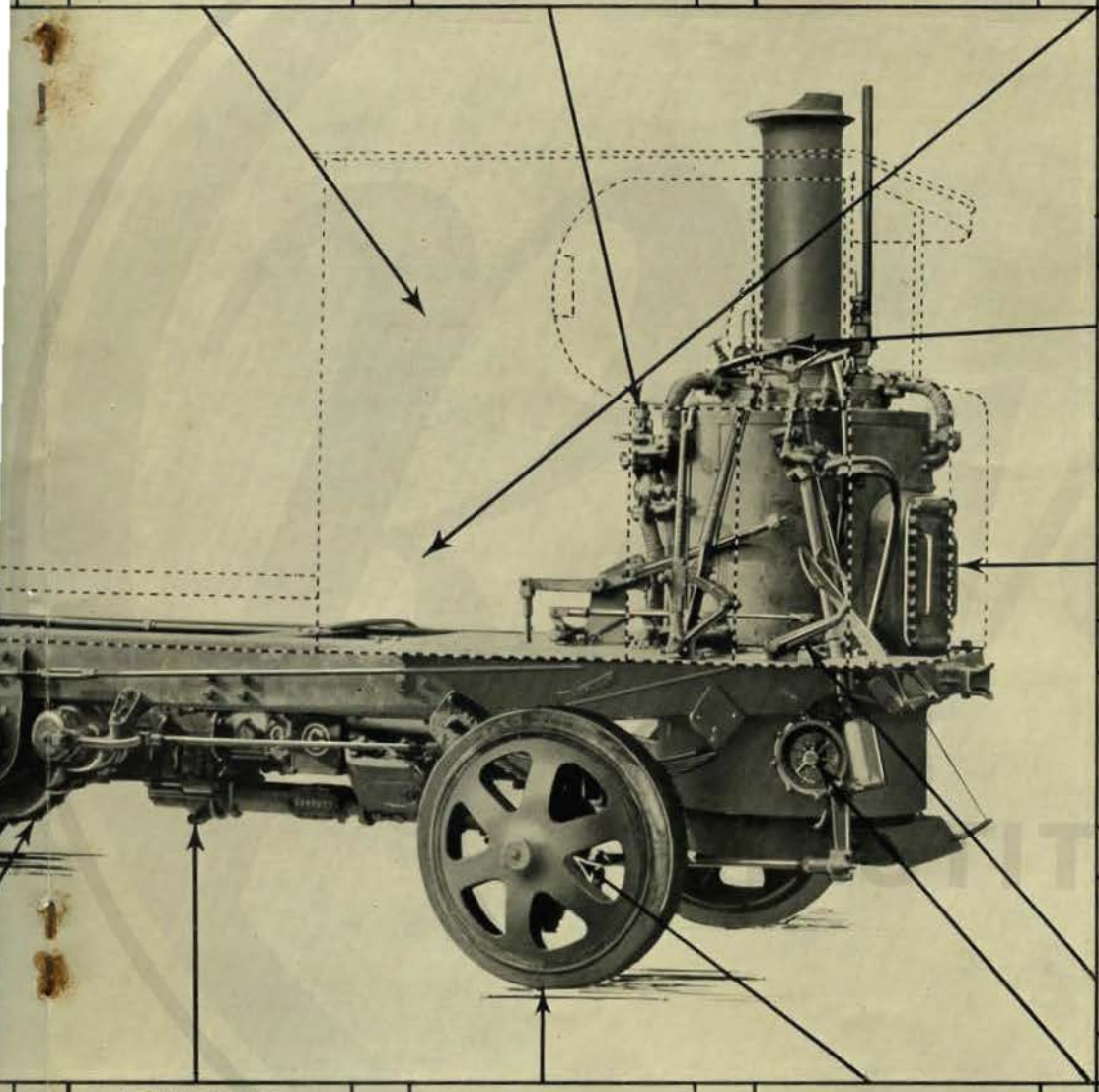
TWO SPEED GEAR ON COUNTERSHAFT FITTED WITH ADJUSTABLE ROLLER BEARINGS

COMFORTABLY UPHOLSTERED DRIVER'S CAB

BOILER FIRED BY CHUTE IN FRONT OF STOKER

WINDSCREEN ELECTRIC LIGHT

INJECTOR. (AWAY FROM BOILER)



BOILER WORKING PRESSURE 250 lbs. per sq. in. GRATE AREA 4·27 sq. ft. HEATING SURFACE 63·59 sq. ft.

FORWARD STEERING POSITION FOR DRIVER

BOILER INSPECTION DOOR (EASILY REMOVED)

ALL CONTROLS WITHIN EASY REACH OF DRIVER

FOOT ACCELERATOR CONTROL

ENCLOSED POPPET VALVE ENGINE WITH ROLLER BEARINGS TO CRANKSHAFT RUNNING IN OIL BATH

FRONT TYRES 180 M/M FOR 720 M/M RIM

ROLLER BEARINGS TO FRONT ROAD WHEELS

"ACKERMANN" STEERING ENCLOSED WORM AND WORM WHEEL RUNNING IN OIL

THE POPPET VALVE ENGINE.

The outstanding characteristic of the new Poppet Valve Engine is

SIMPLICITY

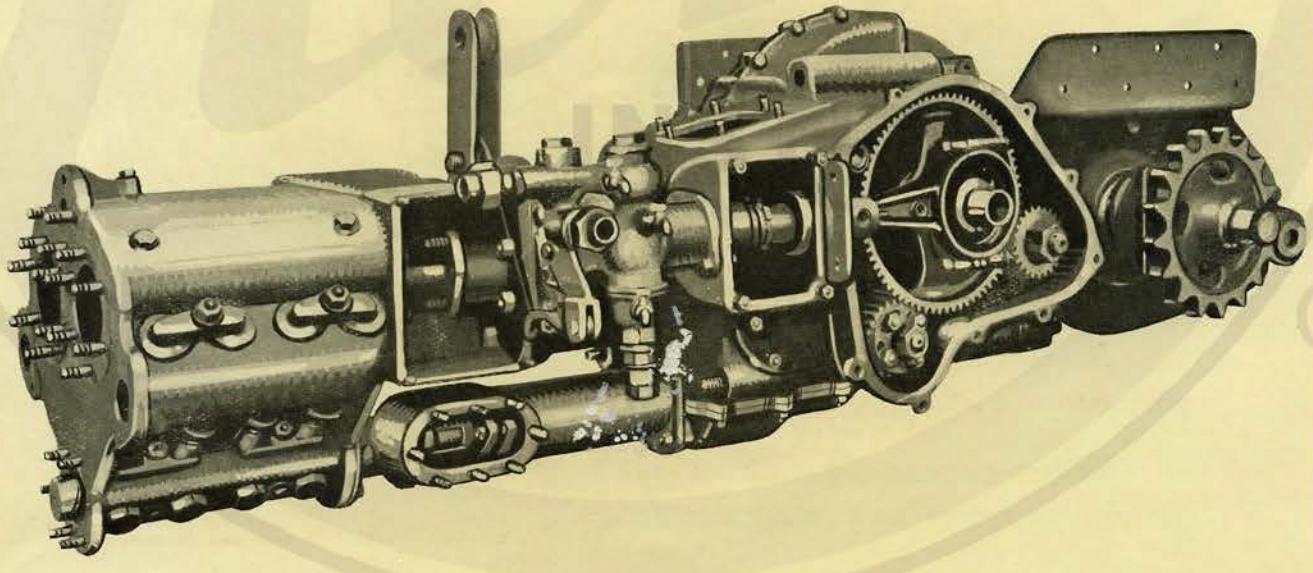
This engine has been under test for over twelve months on the bench and on the road before we considered that it had reached that state of perfection which is necessary in the case of a thoroughly reliable road vehicle. So accurate is the balance and so smooth the running that during these tests the engine was run at a speed of over 800 revolutions per minute without being bolted or held down in any way.

It consists of two high pressure double acting cylinders cast in one block. To each cylinder there are four steam valves of the Poppet or Mushroom type, with an equal number of exhaust valves, the whole eight valves being operated by a single camshaft. The engine itself is reversible, and the cut-off point of steam admission can be changed to suit the constantly varying load.

The power unit is slung in the chassis frame by three-point suspension, the two rear attachment joints of which are mounted on semi-spherical pivots. By this method of suspension any possibility of frame deflection setting up stresses in the engine components is entirely eliminated.

THE POPPET VALVE ENGINE.

In order to combine lightness in weight of the reciprocating parts necessary to produce rapid acceleration with the minimum amount of vibration, and also at the same time to provide ample strength, the pistons are machined from steel pressings, the crossheads are steel and the connecting rods are "I" section drop forgings. The pistons and crossheads are ground in one section after being fitted to the piston rods, thereby ensuring perfect alignment. The piston rods are each fitted with two separate glands which effectively prevent condensed water passing through the oil-bath casings. All moving parts are totally-enclosed in an oil-bath casing, and inspection doors are provided.



THREE SETS OF INDEPENDENT BRAKES.

The brakes are a point of vital importance on any road vehicle, and one to which it is impossible to give too much attention, consequently on the "Garrett" Rigid Six-Wheeler there are no less than

THREE SETS OF INDEPENDENT BRAKES.

All of these brakes operate on the four rear driving wheels.

On the forward driving wheels there are two sets of internal expanding brakes, one operated by hand lever and the other by foot pedal, both controls being situated in the driver's cab.

On the rearmost driving wheels there is one double set of steam operated brakes, that is to say, two brake drums on each rear wheel.

This brake is operated by a steam valve mounted on the steerage column.

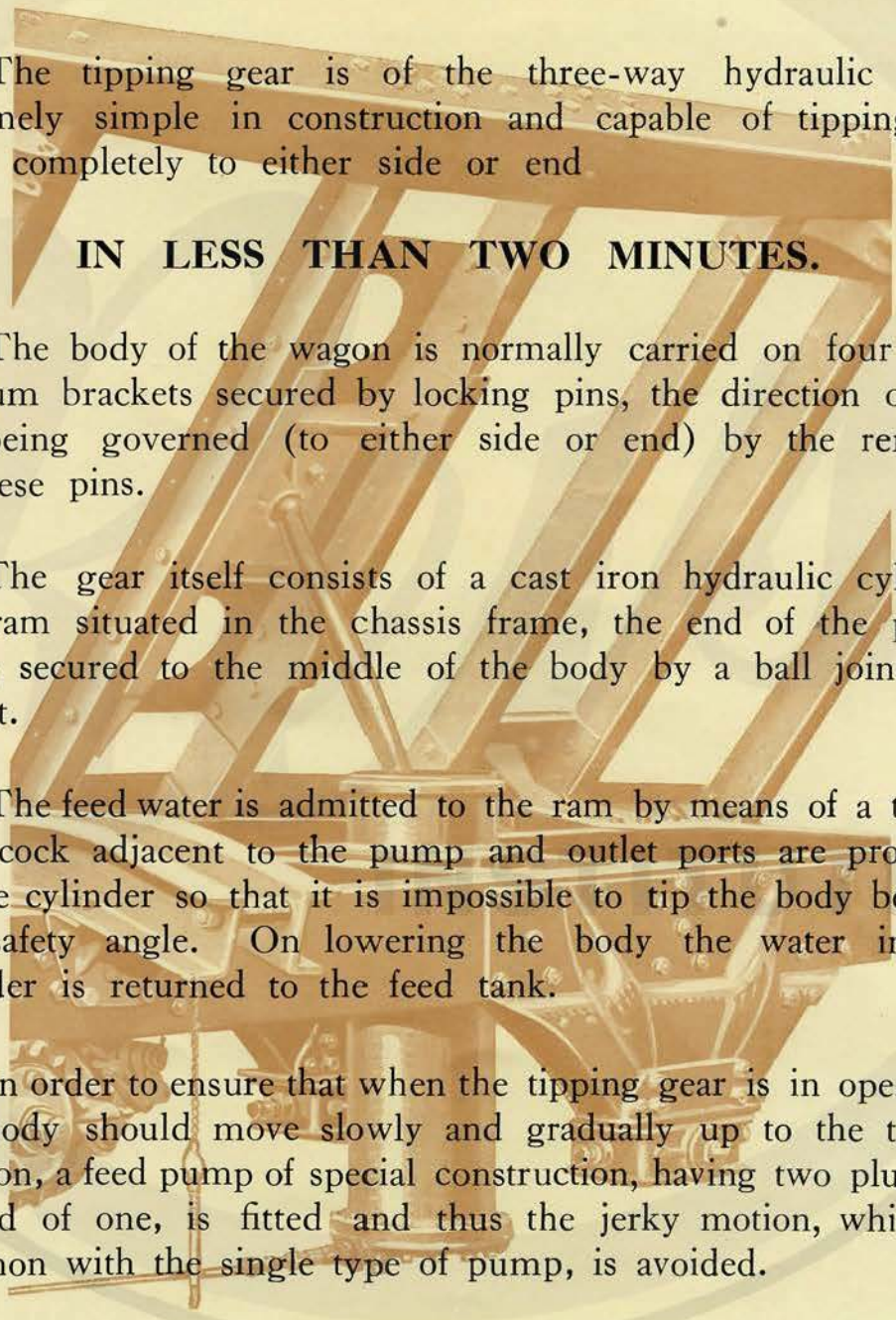
In all there are no less than

SIXTEEN BRAKE SHOES IN THE REAR AXLE ASSEMBLY.

All the brake drums are of exceptionally large diameter and surface, and lined with Ferodo fabric.

When occasion demands, the engine can be reversed, thereby providing a very powerful emergency brake.

THREE-WAY TIPPING GEAR.



The tipping gear is of the three-way hydraulic type, extremely simple in construction and capable of tipping the body completely to either side or end

IN LESS THAN TWO MINUTES.

The body of the wagon is normally carried on four steel fulcrum brackets secured by locking pins, the direction of the tip being governed (to either side or end) by the removal of these pins.

The gear itself consists of a cast iron hydraulic cylinder and ram situated in the chassis frame, the end of the piston being secured to the middle of the body by a ball joint and socket.

The feed water is admitted to the ram by means of a three-way cock adjacent to the pump and outlet ports are provided in the cylinder so that it is impossible to tip the body beyond the safety angle. On lowering the body the water in the cylinder is returned to the feed tank.

In order to ensure that when the tipping gear is in operation the body should move slowly and gradually up to the tipped position, a feed pump of special construction, having two plungers instead of one, is fitted and thus the jerky motion, which is common with the single type of pump, is avoided.

STANDARD FITTINGS.

On all "Garrett" Rigid Six-Wheelers an adjustable windscreen and dynamo electric lighting set are included as standard fittings.

The electric lighting set consists of two electric headlamps, two side lamps and tail lamp which can be used as electric or oil lamps, as desired, the latter being a great advantage in an emergency, and usual watergauge lamp.

On all tipping wagons the bodies are lined throughout with sheet steel, and steel discs to all four rear wheels are provided to prevent sand and grit working their way into the tyres.

The following fittings can be supplied, if desired, at extra charge :

Combined speedometer and mileometer.
Bumper Bars.
Spark Arrester.
Skid Chains.
Additional water tank.
Additional coal bunker.
Westinghouse air brake.
Jib crane to facilitate loading.

A full list of equipment supplied with each wagon will be found on page 37.

SERVICE.

We have always taken a pride and interest in every wagon supplied from Leiston Works. During the course of manufacture every care is taken to ensure that the wagon will be exactly to our customer's tastes and requirements, and after the wagon has been put into service we like to feel that we are in personal touch, through our customer, with its performance.

Travelling inspectors visit the wagons at regular intervals to ascertain that everything is working satisfactorily, and to offer advice in the case of any little adjustment that may be necessary, and to assist the drivers generally in the care and management of their machines.

As every detail of the wagon is accurately machined to jigs and templates, a large stock of spare parts is always ready for despatch from our Works at short notice.

Spare Part stocks are also available for distribution from all the leading centres in Great Britain.

RICHARD GARRETT & SONS LTD

12,000 MILES WITHOUT ANY MECHANICAL TROUBLE.

J. E. HEATH,
ROAD TRANSPORT AND REMOVAL CONTRACTOR,
98, COLWICK ROAD,
NOTTINGHAM.

30th July, 1928.

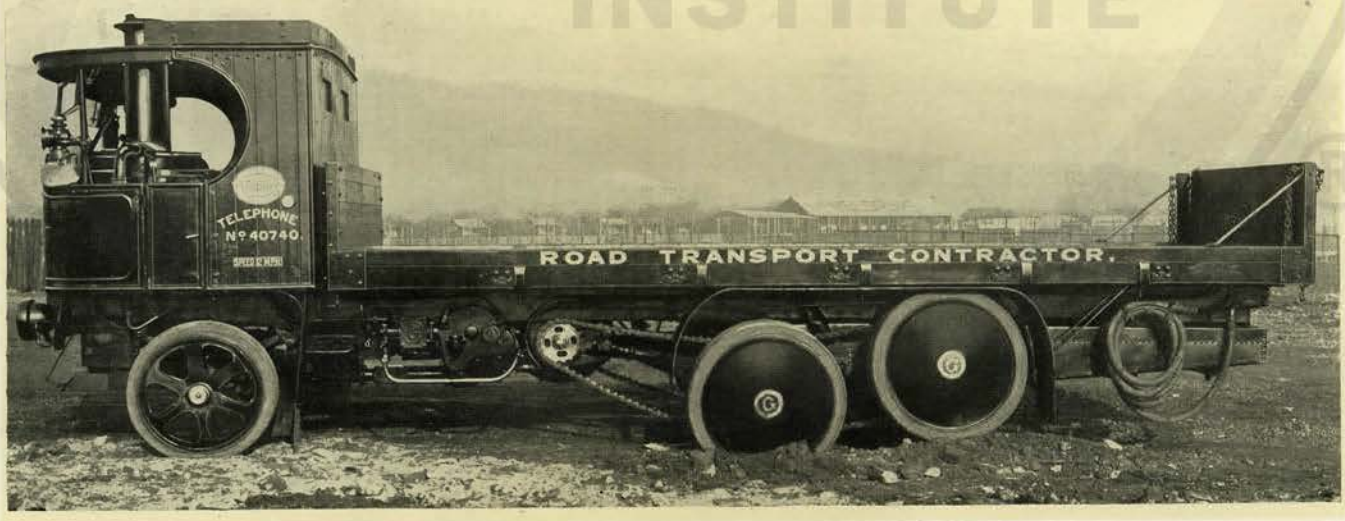
Messrs. R. Garrett & Sons, Ltd.
Engineers, Leiston, Suffolk.

Dear Sir,

It may interest you to know that the first six-wheeler which was taken delivery in February last has covered **over 12,000 miles up to the present date without any mechanical trouble** and the rear tyres are good for another 8,000 miles and the fuel consumption is considerably less than with same load with wagon and trailer.

From the driver's point of view there is a great comfort in knowing that you are not legally limited to 5 m.p.h. as is the case when hauling a trailer.

Yours faithfully,
JOHN E. HEATH.



ESTABLISHED OVER 150 YEARS

COMPARATIVE COSTS SHOW RIGID SIX MOST ECONOMICAL.

ROBERT WYNN & SONS LTD.,
50, SHAFTESBURY STREET, NEWPORT, Mon.

Messrs. Richard Garrett & Sons Ltd., Aldwych House, Aldwych, W.C. 2. *21st July*, 1928.

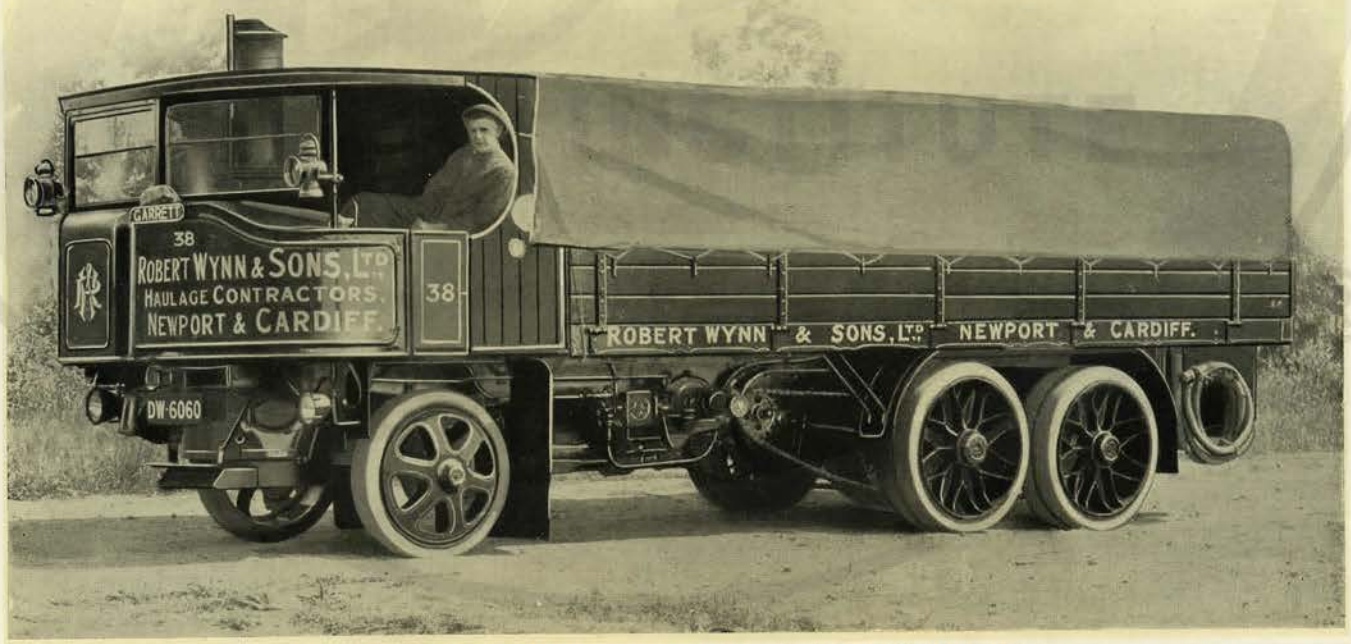
Dear Sirs,

We are pleased to advise that the service we have obtained from our " Rigid Six " has been entirely up to expectation and in every way satisfactory.

The work on which the vehicle has been engaged is chiefly long distance delivery and collection (LONDON) service, fully laden each way,on a round trip of approximately 340 miles. The loading this end takes place on Saturday's the journey commencing Monday morning. Delivery at destination and collection for return is done on Tuesdays also part of the return trip. This is completed on Wednesdays.

With regard to Fuel and Oil, **we would advise that the comparative cost of the various vehicles engaged in this service show that the Rigid Six is the most economical,** pro-rata to the load handled, and we have no doubt that a considerable saving on Time will be made, when the vehicle has been thoroughly " run in."

Yours faithfully, ROBERT WYNN & SONS LTD.,
(Signed) O. T. WYNN, Director.



THE THREE-WAY TIPPING MODEL.

The body dimensions of the standard Tipper are 15 ft. 6 ins. long by 6 ft. 11 ins. wide, the height of sides 2 ft. 6 in., making a total capacity of

270 CUBIC FEET OR 10 CUBIC YARDS.

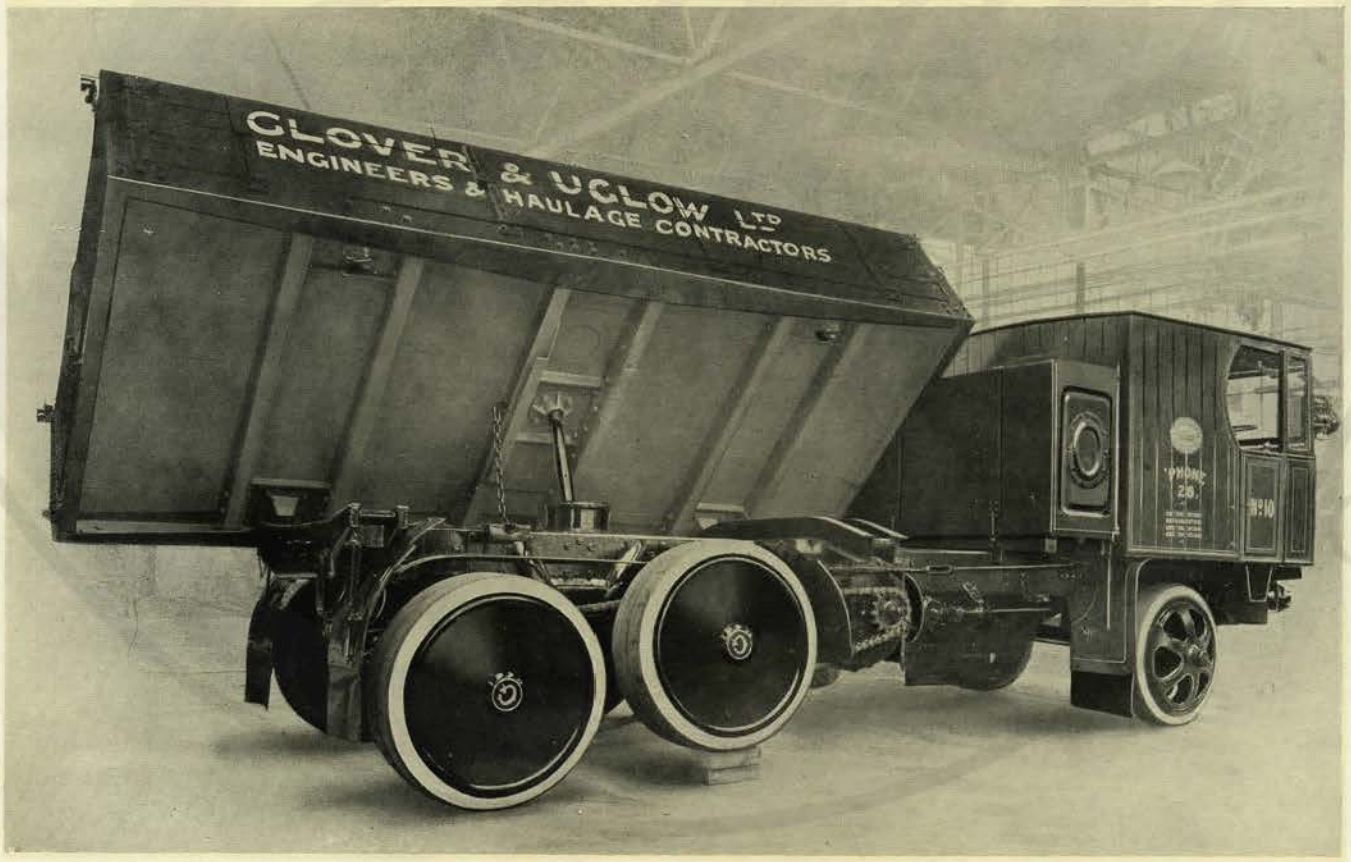
The body is arranged to tip either side or end. The whole of the bodywork, including the cab, is manufactured in our own shops from thoroughly seasoned timber.

As various classes of loads call for different methods of loading, the sides can be supplied in one piece, arranged to hinge in two sections (each section 1 ft. 3 ins. in height), or divided vertically in the centre with a removable stanchion and arranged to hinge in one or two sections, as desired. Body chains are fitted to each section to give support to the sides of the wagon when loaded.

A TIPPING ANGLE TO THE SIDE OF 50° AND A SEPARATE FRAME FOR THE TIPPING BODY.

The illustration below will show clearly the separate steel frame for the tipping body. Like the main frame of the wagon itself, this frame is constructed of pressed steel, which allows for lightness and flexibility and at the same time being extremely strong.

The frame is reinforced by powerful cross members carrying the floor boards, which are securely screwed down with countersunk screws and then lined throughout with sheet steel.



A TIPPING ANGLE TO THE REAR OF 34°

and the tailboard arranged to hinge from the top allows the load to shoot clear immediately the pins are removed

For average loads there is

NO SHOVELLING OUT

required, the whole operation being carried out in a few minutes.

SPREADING A LOAD OF 13 TONS 8 CWTS.

The enormous load carrying capacity of the three-way Tipper can be judged by this illustration of a Rigid Six-Wheeler tipping and spreading a load of

13 TONS 8 CWTS.

of Tar Macadam.

When the destination is reached, the body is tipped to the side and the wagon steamed slowly along, thereby spreading the load in the exact position required for the next operation.

BLOWING OFF STEAM AT THE TOP OF THE HILL.

GLOVER & UGLOW, LTD.
ENGINEERS & HAULAGE CONTRACTORS,
KELLY BAY, CALLINGTON,
CORNWALL.
6/7/28.

Messrs. Richard Garrett & Sons,
Aldwych, W. C. 2.

Dear Sirs,

We have now run our new 12 ton Rigid Six Wheeled hydraulic tipping wagon for approximately two months.

During this period the wagon has covered on an average a daily distance of 60 miles, loaded one way generally with 12-13 tons.

As you are aware the hills in our district are exceptional both in numbers and gradient, but never once has the wagon refused a hill, and the remarkable point about it also is that she is usually blowing off steam at the top of the hill.

In conclusion we would say that although it was a great speculation at first, this being the first Six Wheeler in the district, we have nothing to regret up to the present.

We shall be pleased to give you some further particulars later on.

Yours faithfully,
pp. GLOVER & UGLOW, LTD.
(Signed) W. P. UGLOW.
Director.

RICHARD GARRETT & SONS LTD

THE MOST RELIABLE RIGID SIX-WHEELER ON THE ROAD.

G. SHEPPARD & SONS,
HAULAGE & TRANSPORT CONTRACTORS,
WARMLEY, Near BRISTOL.

Messrs. Richard Garrett & Sons, Ltd., *30th June*, 1928.
Aldwych House, W.C.2.

Dear Sirs,

We are more than pleased with the wagon, it surpasses anything we have yet seen. Its daily work consists of hauling road material a distance of 31 miles per day, with an average load of 12 tons 10 cwts. in a working day of 12 hours, the work being carried out at very little extra cost than your 8-ton wagon, which we think are wonderful results.

The chief points which concern us are: faster than the old type of vehicle; carrying a double load, and almost as cheap to run.

We think it is the best and most reliable Rigid Six-Wheeler on the road.

Yours faithfully, G. SHEPPARD & SONS,
(Signed) T. SHEPPARD.

ESTABLISHED OVER 150 YEARS

LEADING DIMENSIONS.

	Riguntype	Riguntytip
Code Word		
Load Capacity of Wagon	10 to 15 tons	10 to 15 tons
Ditto, Ditto with Trailer	—	—
Cubic Capacity of Body	232 cub. ft.	270 cub. ft.
Inside Dimensions of Standard Body ...	19′ 6″—6′ 9½″	15′ 6″—6′ 11½″
Outside Dimensions of Standard Body ...	19′ 7¾″—7′ 1″	16′ 0″—7′ 3″
Standard Height of Body Sides	1′ 9″	2′ 6″
Weight of Chassis, approx.	8 tons	8 tons 15 cwts.
Weight with Body Light, approx.	9 tons	9 tons 10 cwts.
Ditto, ditto ready for road	9 tons 15 cwts.	10 tons 5 cwts.
Overall Length	26′ 0″	24′ 6″
Overall Width	7′ 3½″	7′ 3½″
Overall Height	9′ 0″	9′ 0″
Height, Ground Level to Floor of Body (light)	4′ 2⅜″	4′ 7¼″
Ditto, Ditto, Loaded	4′ 0¼″	4′ 5″
Diameter of Turning Circle	62′ 0″	52′ 0″
1st Wheel Base	12′ 2″	11′ 4″
2nd Wheel Base	3′ 10″	3′ 10″
Grate Area of Boiler	4.27 sq. ft.	4.27 sq. ft.
Heating Surface	63,598 sq. ft.	63,598 sq. ft.
Working Steam Pressure	250 lb. per sq. in.	250 lb. per sq. in.
Road Speed without Trailer	12 M.P.H.	12 M.P.H.
Ditto with Trailer	5 M.P.H.	5 M.P.H.
Capacity of Water Tank	265 galls.	245 Galls.
Max. Angle of Tip to side	—	45°
Ditto, ditto to rear	—	36°
Size of Tyres : Front Single	180 m/m for 720 m/m rim	180 m/m for 720 m/m rim
Ditto, Rear Twin for all four wheels ...	160 m/m for 850 m/m rim	160 m/m for 850 m/m rim
Approx : Gross Weight Packed	10¾ tons	11¼ tons
Approx : Shipping Measurements	—	—

A COMPLETE SET OF TOOLS AND ACCESSORIES IS SUPPLIED WITH EACH WAGON. Consisting of :

LIGHTING OUTFIT.

2 Head Lamps, electric only.
2 Side Lamps, parafin or electric.
1 Tail Lamp, parafin or electric.
1 Watergauge Lamp, electric.
1 Pressure Gauge Lamp, electric.
1 Switchboard.
1 Dynamo.

ACCESSORIES.

1 Grease Pump complete.
1 Bulb Horn.
1 Suction Hose, complete with rose and 3 leather straps.
1 Boiler Filling Funnel.
1 Galvanized Pail.
1 5-ton Lifting Jack, complete with Tommy Bar.
1 Superheater Blow Out Pipe, complete with handle and unions.
1 Oil Can.
1 Tube Scraper and Handle (handle 2 ft. 6 in. long).
1 Quart tin Cylinder Oil.
1 Quart tin Machine Oil.
2 Drawbar Pins.
4 Cushions.
1 Caulking Tool.

SPARES.

2 Gauge Glasses.
4 Gauge Glass Grummets.
1 Fusible Plug.
Pump Gland Packing, $\frac{3}{8}$ in. sq. by 1 ft. 6 in. long, Talcum.
Stop Valve Gland Packing, $\frac{1}{4}$ in. sq. by 1 ft. 6 in. long, Bell's Victor Loco.
Control Valve Gland Packing, $\frac{3}{16}$ in. sq. by 1 ft. 6 in. long, Bell's Victor Loco.
1 Boiler Front Joint, Salamanderite.
1 Manhole Joint.

SPANNERS.

1 Tube Spanner for Crank Nuts, complete with Tommy Bar.
1 Box Spanner for Con. Rod Bolts.
1 Stub Axle Spanner.
1 Box Spanner for Boiler Door Nuts, complete with Tommy Bar.
1 $\frac{5}{16}$ in. Spanner, single ended.
1 $\frac{7}{16}$ in. Spanner, single ended.
1 $1\frac{1}{2}$ in. Spanner, single ended (for Radius Rod Adj. Nuts.)
1 $\frac{3}{8}$ in. and $\frac{1}{2}$ in. Spanner, double ended.
1 $\frac{5}{8}$ in. and $\frac{3}{4}$ in. Spanner, double ended.
1 $\frac{7}{8}$ in. and 1 in. Spanner, double ended.
1 $1\frac{1}{8}$ in. Spanner, double ended.

STOKING TOOLS.

1 Coal Shovel.
1 Clinker Shovel.
1 Coal Rake.
1 Poker.
1 Hammer.

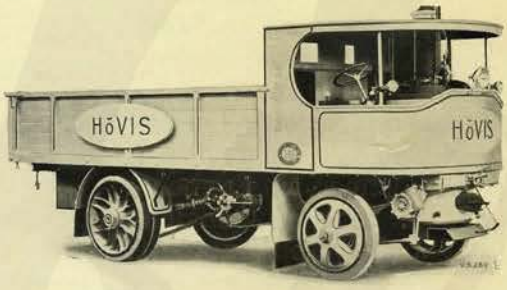
INSTRUCTION BOOKS.

1 for Driving Chains, issued by Messrs. Hans Renolds.
1 for Oil Pump, issued by Messrs. Manzel.
1 for Injector issued by Messrs. Holden and Brookes.
1 Care and Management Booklet.
1 Spare Part List.

SOME TYPES OF FOUR WHEELERS.

Flat Platform Body.

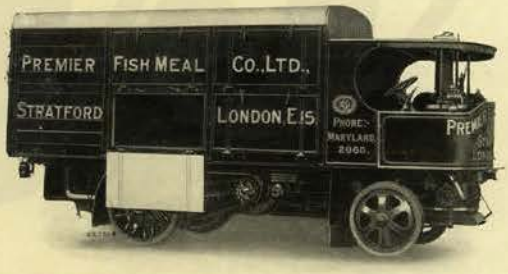
Fitted with Hinged Sides and Tailboard



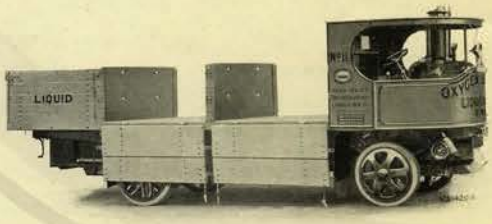
Fixed Sides and Hinged Tailboard.

17 ft. Body with Hinged Sides and Tailboards.

With Bolster Attachment for Timber Carrying.



Covered in Bodies of all Descriptions.



Divided Compartment Bodies.

Pantechnicon Body for Furniture Removals.

SOME TYPES OF FOUR WHEELERS.

Brewers Body with Stanchions and Chains.

For Refuse Collection.

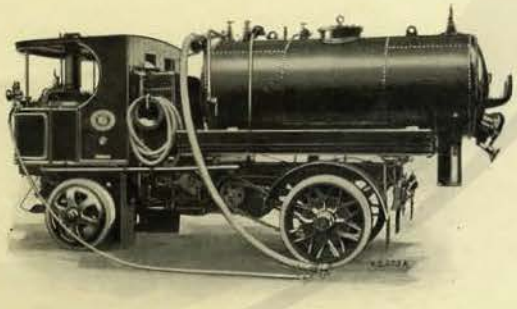
Three Way Tipping Bodies with Standard or Special High Sides.

For Gulley Emptying.

Jib Crane to Facilitate Loading.

For Street Watering.

Turntable Steel Trailers, capacity 1-6 tons.



For Cesspool Emptying.

ESTABLISHED OVER 150 YEARS

RICHARD GARRETT & SONS LTD

SOME WELL KNOWN USERS OF "GARRETT" UNDERTYPE STEAM WAGONS.

MILLERS :

Messrs.
Hovis Ltd.
Thos. Burton & Sons Ltd.
D. Quinton & Sons.
A. M. & H. Rankin Ltd.
Molesworth & Springthorpe.
Whitworth Bros.
W. Vernon & Sons Ltd.
A. A. Gibbons Ltd.
Wm. Ackroyd & Co. Ltd.
W. H. Yeatman & Sons Ltd.
Johnson, Mooney & O'Brien, Ltd.
Sherry & Haycock, Ltd.
Colonel Barron.

BREWERS :

The Oakhill Brewery Co. Ltd.
North Eastern Breweries Ltd.
Sheffield Free Brewery Co. Ltd.
Thos Rawson & Co.
McMullen & Sons Ltd.
Etc.

MERCHANTS AND CONTRACTORS :

Messrs.
J. E. Heath.
A. Cork & Sons.
J. Brown & Sons.
K. Miles.
James Boyd & Sons.
W. J. King.
J. Palmer & Sons.
Richard Smith.
J. Beresford & Sons.
P. H. Jordan.
G. Samways & Sons.
J. Coles & Son.
Robt. Trotter & Sons.
Richard Howle.
Hall & Co. Ltd.
G. Sheppard & Sons.
W. Christopherson.
Packard & Taylor.
Cleehill Transport & Rolling Co.
Teign Valley Transport Co. Ltd.
J. A. Bonell & Sons.
Glover & Uglow, Ltd.
Robt. Wynn & Sons.
G. E. Fanant.

MUNICIPAL AUTHORITIES :

Wandsworth Borough Council.
Devon County Council.
Gloucester County Council.
Dumfries County Council.
Ayrshire County Council.
Antrim County Council.
Haslemer U.D.C.
Wellingborough R.D.C.
Thornbury R.D.C.
Maidstone U.D.C.
Worcester County Council.
Dagenham U.D.C.
Etc.

ENGINEERS :

Blackstone & Co. Ltd.
J. & F. Howard Ltd.
Braithwaite & Co. (Engineers) Ltd.
Liquid Air Ltd.
Thos. W. Ward Ltd.

COAL MERCHANTS, BRICK COMPANIES, GAS COMPANIES, CEMENT MANUFACTURERS, FURNITURE REMOVERS, CO-OPERATIVE SOCIETIES, Etc.:

Premier Fish Meal Co.
Charrington, Gardner Locket & Co. Ltd.
Hoyland Brick Co. Ltd.
Kaye & Co.
The Cement Marketing Co. Ltd.
Bordon & District Gas Co.
Peterborough Equitable Industrial Co-operative Soc.
Peaces Depositories.
Stone Court Brick & Tile Works Ltd.
John Arnold & Sons.
C. S. Bowring & Co. Ltd.
Fullers Earth Union Ltd.
Dunstable Portland Cement Co.
The Herts Gravel & Brick Works Ltd.
Martin & Sillett.

TYPICAL OVERSEAS USERS.—Australia :

Municipality of Mosman.
Municipality of Warratah.
Municipality of Prospect & Sherwood.
Municipality of Quinundti.
Municipality of Tenderfield.
Municipality of Yass.
Municipality of Inverell.
Blacktown Shire Council.
Metropolitan Water Board.
N.S.W. Government Rlys.
Australia Gas Light Co. (Sydney)Ltd.
Brisbane City Council.
Silverspur Mine.
Melbourne Tramway Board.
Freemantle Municipality.

"GARRETT" Undertype Steam Wagons are also Working in :—
Durban, Johannesburg, Salisbury, Christchurch, Bombay, Calcutta, etc.

Also Manufacturers of Electric Vehicles, Electric Trolley Buses, Trailers, Steam Power Plants, Tractors, Traction Engines, Threshing Machinery, Etc., Etc.

ESTABLISHED OVER 150 YEARS

STRENGTH—SPEED—SILENCE