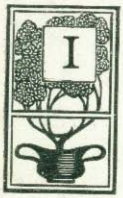
INSTRUCTIONS FOR
White Steam Touring Car

White Sewing Machine Co.
CLEVELAND, :: OHIO

Index



N presenting these instructions we have endeavored to make them as simple and comprehensive as possible, with the idea of assisting and warning our friends and patrons as to the proper and improper handling of the White Steam Car.

No matter what make or type of automobile you may drive, it is a machine, and should be given mechanical study and intelligent care. The designers and builders have put an immense amount of brain work into the production of their cars, but when they leave their hands they are beyond their control, *then the driver must furnish the brains.*

The knowledge of the car is not acquired in an hour, nor in a day, each part should be taken up separately, until thoroughly understood. Do not make the great mistake of driving fast until you have become familiar with the working parts and operation of the car under all conditions of the road. Many accidents are caused through the ignorance of the operator. Know your machine and its limitations before going out for a record trip. A car should be thoroughly inspected before going out for a long run. Look out for loose nuts and connections. See that the engine is working properly and that the driving mechanism is in perfect condition, and both well lubricated. Pay special attention to the bearings on the rear axle. They should run perfectly free and be well lubricated. Too much lubrication is better than not enough. A little attention every day should keep the car in perfect condition all the time.

To Get Good Results from the "WHITE" CAR

See that you have water enough in generator, so steam pressure will readily rise to 400 pounds.

Drive slow for the first half mile. It takes about that distance to heat engine and generator for best results.

Then drive your car so as to retain steam pressure near or above the 300 pound point.

When steam pressure is above 325, your generator is getting no water.

With the pressure below 300 pounds, water is going to generator.

If pressure is held below this point for any great distance, with your car running at a high speed, it will fill generator full of water.

In turn you will get bad results, viz.: car will run sluggish and use an unnecessary amount of gasoline and water.

There is, however, no danger of flooding your coils as long as you can hear your fire automatically closing off.

For fast work do not try to jump into full speed, but gradually increase your speed, keeping your steam pressure close to bypassing point, 300 to 325.

Do not get the idea that you must run at full speed all the time.

It shortens the life of your car and you may shorten other lives.

One-half of the maximum speed of a "White" Touring Car is a violation of any automobile speed law in the United States.

Top View of Chassis

Plate No. 1

No. 1-1 Flue
No. 2 Generator
No. 3-3 Brake Drum
No. 4 Housing containing compensating gear and bevel driving gear
No. 5-6-6-7-8-8 Grease Cups
No. 9 Emergency Brake Lever
No. 10 Reverse Lever
No. 11 Hand Air Pump
No. 12 Hand Water Pump
No. 13 Gasoline Tank
No. 14 Steering Wheel
No. 15 Throttle Wheel
No. 16 Water Tank, man hole for filling
No. 17 Low Pressure Cylinder
No. 18 High Pressure Cylinder
No. 19 Separator Well
No. 20 Condenser
No. 21 Exhaust Connection from engine to condenser
No. 22 Throttle Valve
No. 23 Air Valve from Power air pump
No. 24-24 Grease Cups. Lubricating front axle pins.
No. 25 Lever admitting live steam to low pressure cylinder
No. 26 Live steam connection operating water regulator
No. 27 Front Wheel Grease Cups—28-foot brake

Top View of Chassis

Plate No. 1

AA Check valves on hand water pump

B Main burner valve

C Starting lever; operating lever No. 25.

D Air pump lever; operating power air pump on engine cross head

E Filling hole, gasoline tank

F Fire regulator

HH Gasoline supply pipe

J Driving shaft

K Engine casing oil cup

L Cylinder oil cup

M Steam gauge

N Valve closing high pressure exhaust into low pressure steam chest

O Air gauge

PPP Water connection from power pump to generator

RRR Steam connection from generator to engine through throttle No. 22

S Top blow-off valve

U Vaporizer

V Connection from water tank to power pump

W Valve opening exhaust from high pressure cylinder

X Water regulator

Y Valve admitting live steam to low pressure side operated by foot lever "C"

TOP VIEW OF CHASSIS.

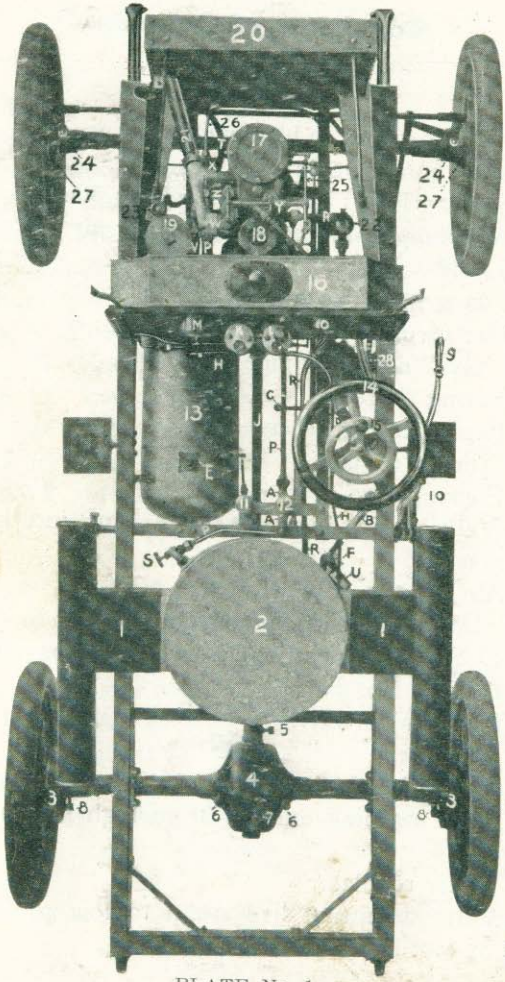


PLATE No. 1.

Valves "N" "W" & "Y"

It is very important that these simpling valves should seat properly.

Failure in engine to start properly or a rough running engine may be traced to these valves.

To Start the Engine

Press the plunger in foot board marked "Start." This plunger operates the leaver arm "C," which in turn operates the leaver arm 25, causing valve at "Y" to open one thirty-second of an inch.

"Y" admits live steam into low pressure cylinder or steam chest.

At the same time valve "W" opens and valve "N" closes, thus converting the compound engine into a simple engine. When the engine is run as a compound the valves at "Y" and "W" are closed, valve "N" standing open.

The starting plunger must *always* be pressed ALL THE WAY down when starting car from stationary position.

And released as soon as the car is well under motion.

See that starting plunger returns to proper position after removing the foot.

Run the engine slowly until the cylinders are free of water.

Side View of Chassis

Plate No. 2

No. 1-1 Flue
No. 2 Generator
No. 9 Emergency brake
No. 10 Reversing lever
No. 13 Gasoline tank
No. 14 Steering wheel
No. 15 Throttle wheel
No. 16 Water tank
No. 19 Separator well
No. 20 Condenser
No. 25 Lever admitting live steam to low pressure cylinder
No. 27 Gasoline valve cutting off gasoline supply at tank
No. 28 Foot brake lever
No. 31 Main burner valve, connecting with "B" Fig. 1
No. 32 Reverse lever rod connecting with lever No. 10
No. 34 Connection for cylinder oil pump to steam chest
No. 35 Overflow from condenser
"A" Steering arm and connection to front wheel
"E" Filling hole gasoline tank
"F" Fire regulator
"G" Pilot light
"L" Cylinder oiler with hand pump attachments
"R" Steam connection to engine (See R, Fig. 1)
"V" Plugs to fill engine casing with oil

SIDE VIEW OF CHASSIS.

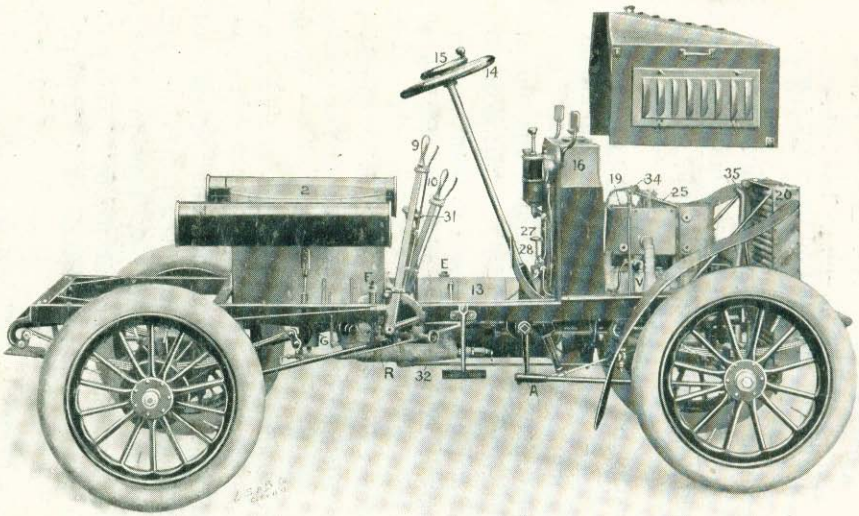


PLATE No. 2.

Lubrication

Lubrication for cylinders and crank pit is effected by means of power pumps on the dash driven direct by belt from main shaft.

The cylinder oil pump also contains a hand pump by which the oil may be forced into the cylinder by hand.

Use for oil cups 600 "W" vacuum cylinder oil.

Be sure your cylinder is getting proper lubrication. In addition to automatic cup pour one pint of oil in crank pit each 100 miles.

The rear axle is encased with the compensating gear running in oil.

Oil should be replaced from time to time through plug in top of casing. Use cylinder oil for this compensating gear case.

Nos. 5, 6-6, and 8-8, plate 1, are hard grease cups.

Pay close attention to these, seeing that they are oiling each bearing properly.

The driving shaft universal joints are provided with hollow pins for hard grease lubrication. See that these pins are kept properly oiled.

Also use hard oil freely on square end of driving shaft in sleeve.

Steering joints and spring bolts are also hollow for hard grease lubrication.

Compression grease cup will be found in tool box for oiling these joints.

Front wheels are oiled by removing small caps Nos. 27, plate 1, and forcing hard oil into the bearing.

Remember that proper lubrication of all points is very essential to the life of your car.

Oil is cheaper than repairs.

To Light Sub-Burner

Close Valves "F" and "J," plate 7.

Open main valve marked 27, plate 2.

After enough oil has run out through valve "E" to fill drip cup in bottom of "Q," close valve "E."

Light and let burn for one minute.

After which open valve "F."

Valve "G" regulates height of pilot light flame. Set this the proper height and leave it in that position.

You can see flame by opening slide door and looking through small hole in side of body.

After the sub-burner has burned for two minutes, the main burner "J" may be opened.

If you see liquid gasoline running out of second mixing tube, pilot light has not burned long enough before opening main shaft.

Remember that the gasoline in your main burner should always burn as a gas and not as a liquid.

Wind Blinds in Flues

Located in draft pipes 1-1, plate 1, you will find automatic wind blinds.

See to it that these work perfectly free at all times so that they will change their position automatically.

Right Side of Engine

Plate No. 3

No. 1-2 Union
No. 3 Arm operating power air pump
No. 4 Blow off valve
No. 5 Foot brake lever
No. 6 Foot brake connecting rod
No. 7 Throttle connecting rod
No. 8 Throttle stuffing box nut
No. 10 Throttle valve stem and lever
No. 12-12 Plugs through which oil may be drained from casing
No. 13 Reverse lever connecting rod
No. 14 High pressure steam chest
No. 15 Low pressure steam chest
No. 17 Low pressure cylinder
No. 18 High pressure cylinder
No. 25 Lever admitting live steam to low pressure cylinder
No. 26 Live steam connecting to water regulator. (See Fig. 1, No. 26.)
No. 28 Foot brake
A Front universal joint for main driving shaft.
B Connecting rod between upper and lower half brake band
C Lower brake band
D Upper brake band
E Rod operating power air pump
F Rod operating starting lever No. 25
G Connection from casing oil pump
H Stuffing box nut
I Valve stem stuffing box nut
J Spring holding lever back when not in use

RIGHT SIDE OF ENGINE.

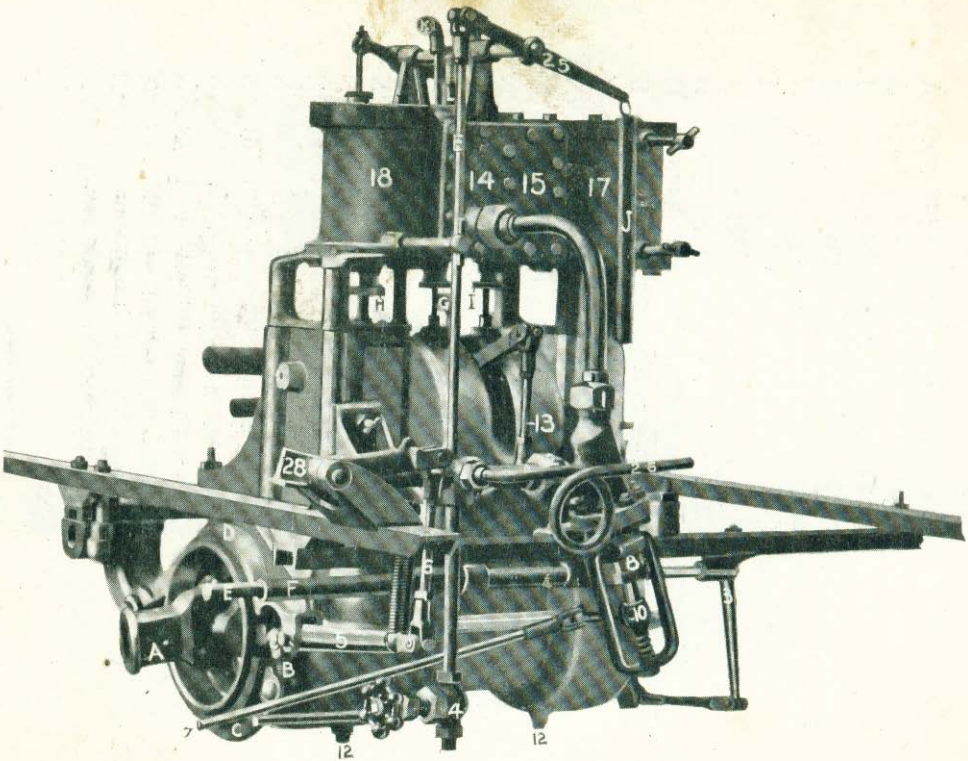


PLATE No. 3.

Left Side of Engine

Plate No. 4

No. 3 Lever operating power air pump
No. 5 Connection to steam gauge
No. 12 Plugs to drain engine casing of oil
No. 17 Low pressure cylinder
No. 18 High pressure cylinder
No. 19 Low pressure exhaust
No. 20 High pressure exhaust
No. 21 Connection to condenser
No. 22 Power air pump
No. 23 Pin in cross head which drives air pump
No. 24 Condenser pump
No. 25 Lever operating valve admitting live steam to low pressure cylinder
No. 26 Live steam connection operating water regulator
No. 27 Power water pump
A Connecting condenser pump to separator
B Connecting air pump to gasoline tank
H Stuffing box nut, low pressure cylinder
H Stuffing box nut, high pressure cylinder
I Stuffing box nut, low pressure valve stem
I Stuffing box nut, high pressure valve stem
N Valve closing opening into low pressure steam chest
W Valve opening high pressure exhaust into condenser
P Connection from power pump to generator
T Connection from condenser to condenser pump
V Connection from water tank to power pump

LEFT SIDE OF ENGINE.

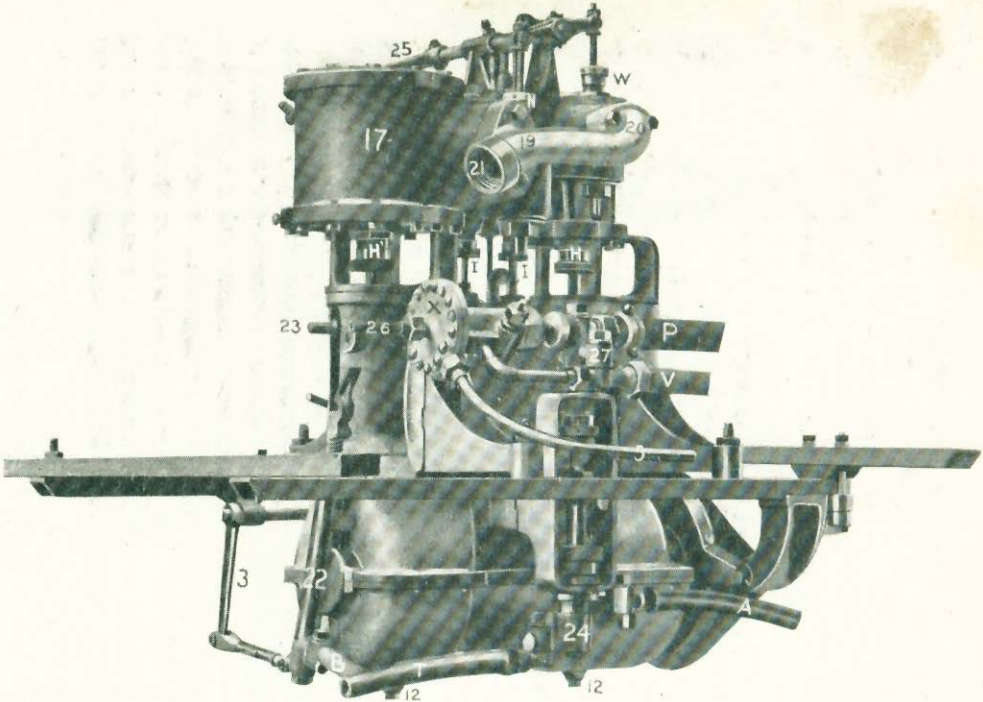


PLATE No. 4.

To Drain

Just before turning off fire, open valve "S," plate 1, and valve No. 4, plate 3.

Allow water and steam to all blow out of coils.

Disconnect union next to hand water pump on feed pipe "P," plate 1.

Then disconnect union No. 2, plate 6. Force air through pump from this point until water is expelled.

Disconnect union next to condenser on hose "T" and union on hose "A" next to oil separator.

Force air in hose "T" until water is expelled.

Open throttle to let water drain from steam chests.

The Air

The power air pump is driven by cross head on the low pressure engine.

It is thrown in by means of foot plunger marked "Air."

See that the valve 23 next to separator well is open when using the power air pump; otherwise no air from the power pump will enter the gasoline tank.

The hand air pump 11 is a pump and valve combined, and is opened by pressing down and turning the plunger handle to the left, after which it is operated in the usual manner.

When through pumping, hold down and turn to the right until closed.

Use from 35 to 40 pounds of air pressure for good results.

The Condenser

The exhaust steam is passed to condenser 20 through exhaust pipe 21, plate 1.

The water of condensation falling to the bottom of condenser is then pumped back by the water pump 24, plate 6.

Passing through the separator well 19 on its way to tank.

In this separator well upon the screen at bottom is found the filtering waste. This waste should be renewed once every 100 miles.

Underneath the cap or cover of condenser well is a gasket to ensure a tight joint at this place.

A leak here will cause unnecessary water consumption.

Clean the water tank when you find an accumulation of oil on the top of the water.

Throttle

Plate No. 5

No. 1-2 Unions
No. 3 Bolts holding throttle to frame
No. 4 Blow off
No. 5 Union
No. 7 Frame
No. 8 Stuffing box nut
No. 9 Throttle valve stem
No. 10 Lever
No. 11 Yoke
No. 12 Spring
No. 13 Set screw
No. 14 Throttle valve stuffing box
No. 15 Connection from throttle to engine steam
No. 22 Throttle casting
No. 26 Live steam connection to water regulator
R Connection from generator

The throttle may in time become leaky, in which case it will become necessary to break connections and remove throttle and grind in seat until tight.

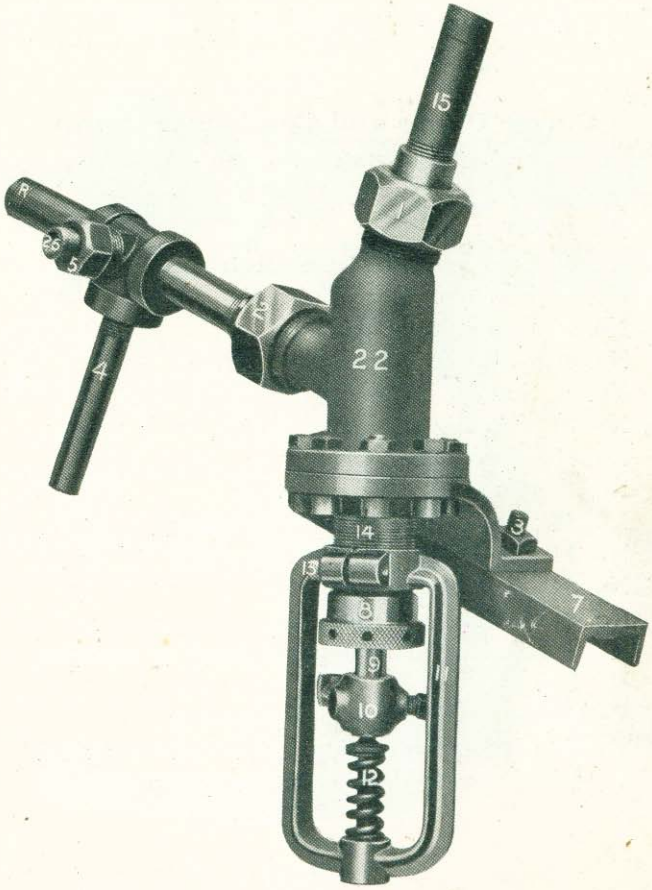


PLATE No. 5.

Power Pump and Condenser Pump

Plate No. 6

No. 1, 2, 3, 4 Unions
No. 5 Connection to steam gauge
No. 6 Lower power pump check
No. 7 Upper power pump check
No. 8 Adjusting worm to set spring
No. 9 Stuffing box nut
No. 10 Stuffing box nut
No. 11 Power pump plunger
No. 12 Condenser pump plunger
No. 13 Lower condenser pump check
No. 14 Upper condenser pump check
No. 24 Condenser pump
No. 26 Live steam connection
A Connection from condenser pump to separator
H Bypass
P Connection from pump to generator
T Connection from condenser to condenser pump
V Connection from water tank to pump

POWER PUMP AND CONDENSER PUMP.

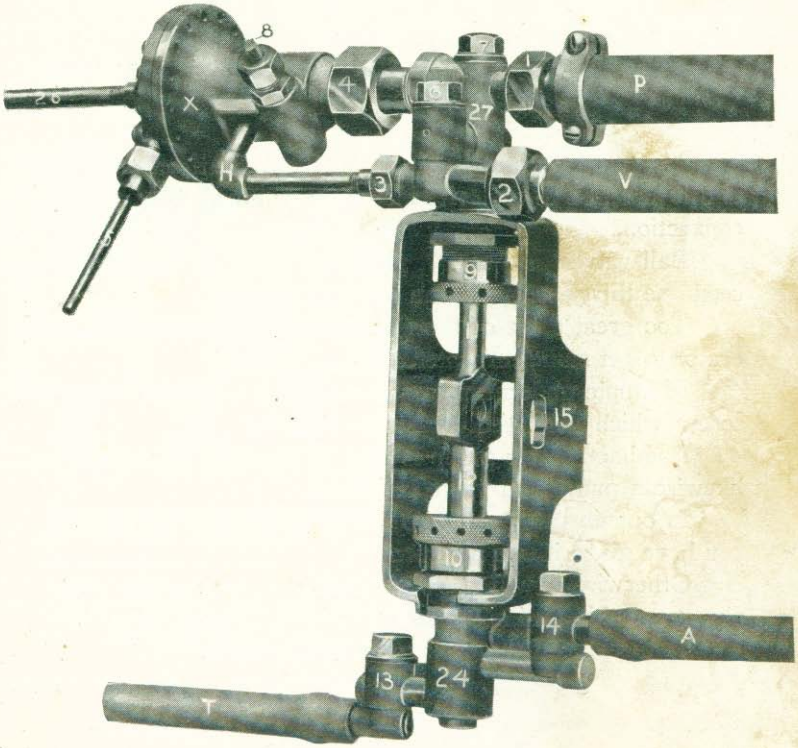


PLATE No. 6.

The Water Pumps

The power water pump is operated from an eccentric and is attached to the left side of the engine under exhaust connection.

Ball valves at 6 and 7, plate 6, should have not to exceed one thirty-second of an inch lift.

Too great a lift of these checks will not allow the generator to get sufficient water.

In nipple underneath union marked 4 is located a small screen which will need occasional cleaning.

The hand water pump is next to hand air pump, and is likewise a pump and valve combined.

In opening this valve do not allow plunger to rise until you have given it one full turn.

Otherwise it will allow the water to accumulate under plunger, making it impossible to push the plunger down until you have removed the packing from the pump.

To Remove Vaporizer

Break union at "D," plate 7.

Pull out through fire door first disconnecting reachrod so as to allow vaporizer to be removed.

Vaporizer can be cleaned by taking out screws and drilling out passages.

Use No. 4 drill.

To Clean Regulator

Remove top screw cap "W," plate 7, and take out spindle.

Do not change adjusting nuts.

Remove valve stem "J" and caps "VV." Break union at "H."

A small wire, No. 73, can then be passed through all the channels.

When replacing these parts, they should be set up and tested for leaks.

The Generator

Plate No. 7

A Water connection from pump
B Steam connection to throttle
Figs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 Generator coils
J Main burner valve stem
S Support for vaporizer
P Main burner
K Fire regulator
L Valve connection to seat
M Mixing tube
Q Sub burner
R Connection to gasoline tank
T Cleaning plug for nozzle
N Spreaders to hold coils in position
O Vaporizer
CC Contains wicking to strain gasoline
D Union
E, F, and G Sub burner gasoline valves
W Fire regulator screw cap
VV Clean out caps on regulator
U Safety valves
X Steam pipe to engine
H Union
Y Steam pipe containing fire regulator

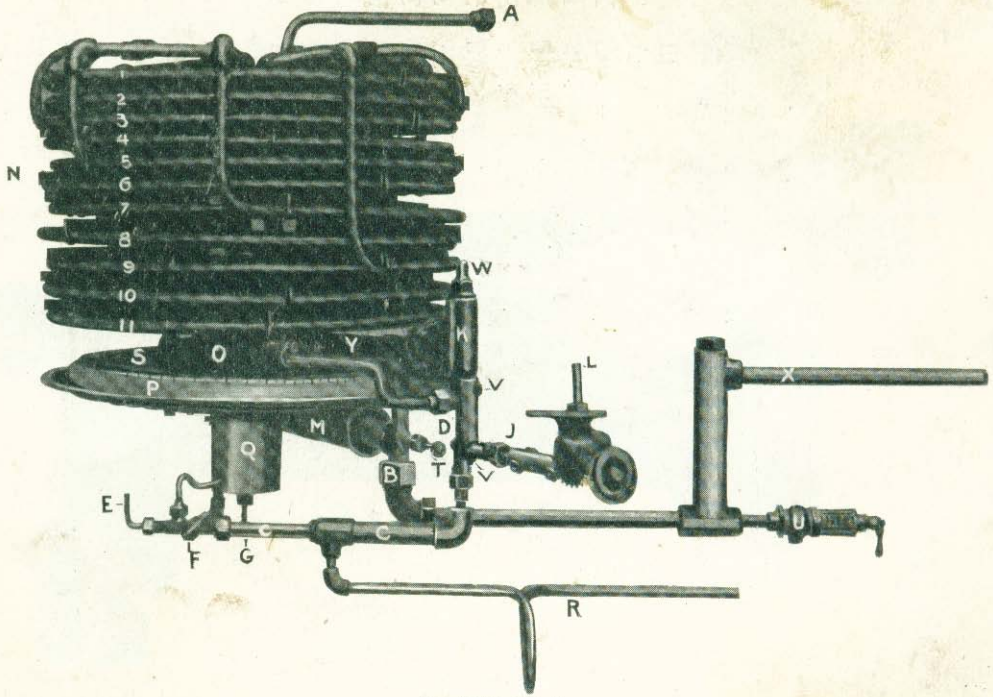


PLATE No. 7.

Water Regulator

A Steam Pressure Pipe Connection.
B Copper Diaphragm Plate
C Connection to Steam Gauge
D Diaphragm Shifting Pad
E Plugs
F Valve
G By Pass
H Spring Adjusting Worm
I Spring Adjusting Nut
J Spring Adjusting Pad
K Spring
L Valve Seat
M Flange
N Lever Operated by F to open Valve G
O Lock Nut for Valve Adjustment

WATER GENERATOR.

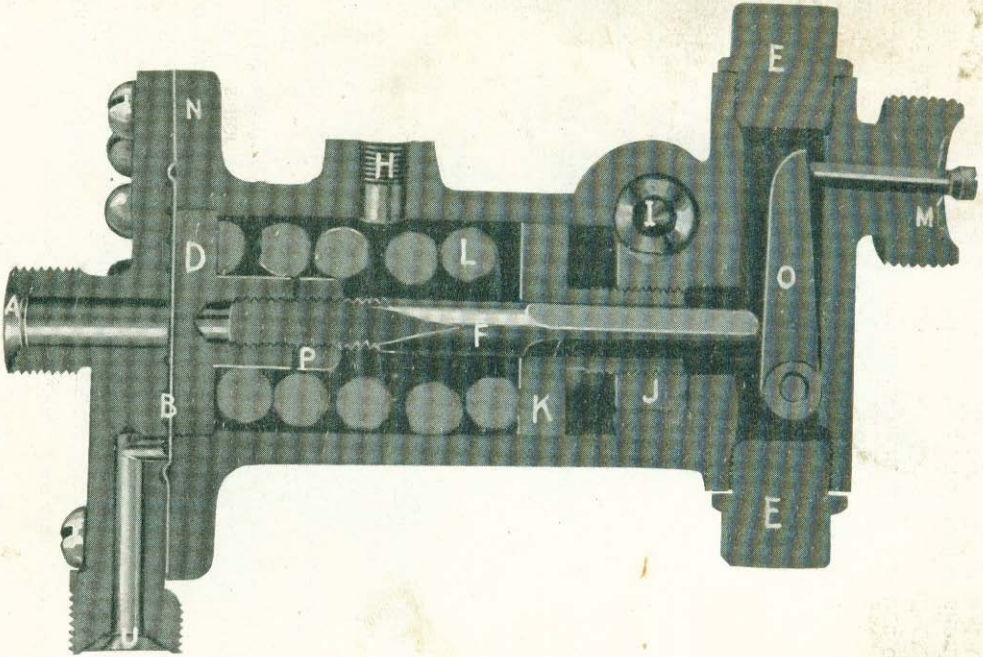


PLATE No. 8.

To Set Water Regulator

Place rear wheels of car on jacks. Disconnect bypass union No. 3, figure 6.

Run engine and when steam pressure reaches 325 pounds water should come through this bypass.

When steam pressure drops to 300, the water should cease coming through bypass.

If it is not set properly, it can be adjusted by turning adjusting worm to left to raise pressure, and to right to let it down.

Should regulator leak, water will show at bypass before the full flow or bypass point is reached.

In this case Regulator will have to be taken out and the valve "M" ground. (See directions for grinding water regulator.)

To Grind Water Regulator

Remove regulator from car.

Grind by turning valve "M" with small screw-driver until the seat shows a dull finish all the way around on both the valve and stem.

Use powdered pumicestone to do this with.

Where the seat has been badly worn, or in replacing a valve stem, the stem "F" should be readjusted so that pad "D" will be in line with the face of flange "N" when "M" is seated.

This can be set accurately by using a straight edge on face of flange "N."

In taking the water regulator apart, the spring should be released first by screwing the adjusting pin "I" to the right.