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*** START OF THE PROJECT GUTENBERG EBOOK MARVEL CARBURETER AND HEAT CONTROL ***

MARVEL CARBURETER AND HEAT CONTROL

AS USED ON
SERIES 691 NASH SIXES

BOOKLET

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MARVEL CARBURETER CO.
FLINT, MICHIGAN
U.S.A.

MODEL "S" CARBURETER

Used on Series 691 Nash Sixes

The carbureter measures the fuel charges for the engine and automatically mixes them with the proper amount of air to form a highly combustible gas. The Marvel Model "S" Carbureter is of the automatic air valve, heat controlled type. Its outstanding advantages are:

1. Simplicity of construction and operation.

2. Quick starting in any weather.
3. Automatically controlled heat application to ensure complete vaporization of fuels.
4. Economy in fuel consumption.
5. Ease of adjustment to meet varied driving and climatic conditions.

CONSTRUCTION

The construction embodies a main body or mixing chamber and a conventional float chamber bowl with fuel strainer attached at point of entrance of fuel to bowl. Within the mixing chamber are two nozzles which proportion the amount of gasoline used in the mixture. One of these nozzles, called the "low speed," is regulated by the gasoline adjustment screw at bottom of carbureter and the other, called the "high speed," is controlled by the automatic air valve. An air screw is provided which regulates the pressure of the air valve spring enclosed therein. Within this screw is also enclosed a plunger connected by a link to the air valve. The function of this plunger is to provide a resistance in addition to that of the air valve spring to assist in acceleration. This arrangement of plunger and air valve screw is termed the dash pot.

A further control of the high speed jet is provided by the fuel metering valve operated by the carbureter throttle. This valve provides the maximum fuel feed to the "high speed" nozzle when the throttle is fully opened for high speeds and for quick "pick up." During the ordinary driving ranges this valve controls the amount of fuel being used, thus providing all the economy possible. This valve is entirely automatic and requires no adjustment.

The passage-way from the mixing chamber to the intake manifold is controlled by a butterfly valve which is called the throttle-valve and is connected to the throttle-lever on the steering wheel as well as to the foot accelerator, its position determining the amount of gas and air or mixture being fed the engine.

STARTING

A choke button is provided on the instrument board to assist in starting. Pulling out this button closes a butterfly choker valve (see cut) in the air intake passage of carbureter which restricts the air opening of the carbureter, and consequently produces a richer mixture.

To start engine, pull out choke button all the way. Advance spark lever about half way and throttle lever about one-quarter way and depress starter pedal.

As soon as motor fires when starting, this control should be released part way, otherwise too much fuel will be drawn from carbureter, causing flooding of the motor and failure of the latter to continue to promptly fire. After starting, motor should be allowed to run "part choke" as stated for a few minutes while warming up, then the choker control should be fully released, or pushed in completely on the instrument board, and engine allowed to run normally for sometime until water in cylinder jackets is thoroughly warmed up before starting to make final carbureter adjustments.

HEAT CONTROL—STOVE

In the colder seasons warm air is fed to air intake of carbureter through the warm air elbow "F" (see cut). This elbow connects the carbureter with the warm air stove, which is a casting surrounding the two exhaust heat tubes which supply exhaust heat to the carbureter jackets as described below.

The amount of heat required for proper carburation depends on the temperature of the outside air. The first means of control is in the warm air stove just described, which should be connected to the carbureter furnishing warm air to carbureter air intake in all seasons of the year when the outside air temperature is below 50° F., whenever the outside air temperature runs above this point cold air should be furnished to carbureter air intake. This can be done by loosening the wing nut holding the warm air elbow "F" on the stove and also loosening the set screw holding this elbow in the air intake of carbureter, after which slide elbow out of air intake and revolve it—180 degrees about an horizontal axis and re-insert in carbureter air intake and lock in place with set screw. The opening in the elbow now is turned down away from the stove and draws in only cold air.

The above procedure, it must be understood, will vary somewhat due to differences in locality, altitude and fuels used, but it should be borne in mind that the best economy can be had with cold air passing to the carbureter, and the stove should not be connected until the acceleration and performance of the job requires the use of warm air for the best results.

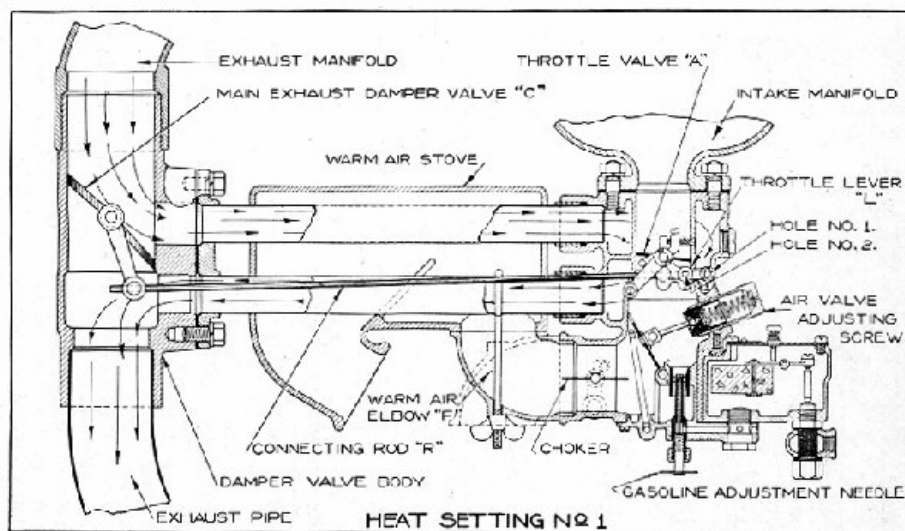
The adjustment of the carbureter should be made per the above description of the stove, as the latter is used for meeting weather conditions and should be set as described.

HEAT CONTROL—CARBURETER JACKETS

The carbureter and manifolds have been designed to utilize the exhaust gases of the engine to insure complete vaporization and a consequent minimum consumption of fuel. This is accomplished by surrounding the upper portion of the mixing chamber with a large heat jacket provided with an inlet and an outlet opening and connected by means of tubes to an exhaust manifold valve body in the exhaust pipe of the engine; this valve body, housing a large valve called the main-exhaust-heat-valve ("C" in cut) within the body itself, the return or outlet tube from the carbureter heat jacket entering the valve-body in the lower portion below the main-exhaust-heat-valve.

The main-exhaust-heat-valve "C" is connected by means of a lever and long connecting rod to the throttle lever of the carbureter so that when the throttle valve is operated the main-exhaust-valve is operated simultaneously with it.

The purpose of the carbureter heat jacket and valve in exhaust line with connections described, is to provide means for utilizing the heat of the exhaust gases of the motor for vaporization of the fuel supplied the engine by the carbureter and to do so automatically. The automatic feature of same is accomplished by setting the Main-Exhaust-Heat-Valve "C" by means of the long connecting rod, in closed position with the closed or idling position of the throttle valve, thus providing for and causing all of the exhaust gases of the engine to pass through the heat jacket of the carbureter when engine is idling and to regulate the volume of this heat as throttle is opened by automatically opening the Main-Exhaust-Heat-Valve, thus allowing the increasing volume of the exhaust gases to pass on out through the main exhaust pipe without being deflected and by-passed to the carbureter heat-jacket as the motor speed increases.

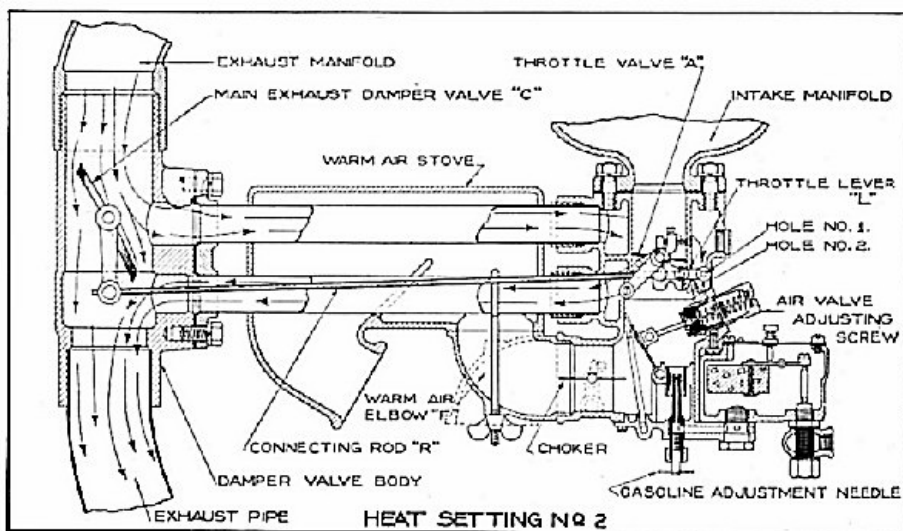


HEAT SETTING No. 1

By referring to the cut shown (See Page 5) and noting "Heat Setting No. 1," it will be noted that valve "C" in main exhaust line is fully closed with the closed or idling position of the throttle valve. This adjustment is accomplished by having long connecting rod "R" from valve "C" Lever set in "Hole No. 1," in Throttle Lever "L," being sure that when throttle valve is standing in fully closed or idling position that valve "C" is also in closed position, proving out the latter feature by loosening connection of valve "C" lever holding long connecting rod; holding Throttle Lever "L" in closed or idling position and bringing up valve "C" lever on connecting rod "R" as far as it will go to the right toward the carbureter and tightening its connection on the connecting rod in that position. After having made the adjustment as just described, it is assured that "Heat Setting No. 1" has been properly made and that all of the heat possible from the exhaust has been secured.

This "Heat Setting No. 1," provides as stated, for the most exhaust heat obtainable and should be used during the entire year, except in extremely hot seasons or hot climates or when high-test gasoline is being used in engine and even then unless engine is losing power due to excessive heat.

If loss of power or mileage due to too much heat is experienced, first be sure that it is not due to driving on hot-air instead of cold-air. After making this observation, if there is still too much heat, refer to cut (See Page 7) describing "Heat Setting No. 2." It will be noted that connecting rod "R" from valve "C" is removed from "Hole No. 1," in Throttle Lever "L" and placed in "Hole No. 2," in Throttle Lever. This change is all that is necessary in order to reduce the amount of heat applied to carbureter. In "Heat Setting No. 2," when the throttle is in closed or idling position, valve "C" is quite away off its seat. This adjustment provides for a great deal less heat than is provided by "Heat Setting No. 1" and is all that is required in the reduction of the volume of heat together with driving on "Cold" air for the main-air-supply, in the warmest weather or hottest climates.



HEAT SETTING No. 2

NOTE—After original position of valve "C" is made as described in "Heat Setting No. 1" do not again readjust valve "C" on connecting rod but when changing from "Heat Setting No. 1" to "Heat Setting No. 2," merely change position of long connecting rod from "Hole No. 1" to "Hole No. 2" in throttle lever.

ADJUSTMENT

No change should be made in the carbureter adjustments until after an inspection has been made to determine if the trouble is in some other unit. It should be noted that the gasoline lines are clear, that there is gasoline in the vacuum tank, that there are no leaks at connections between carbureter and engine, that the ignition system is in proper condition, and that there is even compression in all cylinders.

If it is necessary to test adjustment or to make a readjustment proceed as follows:

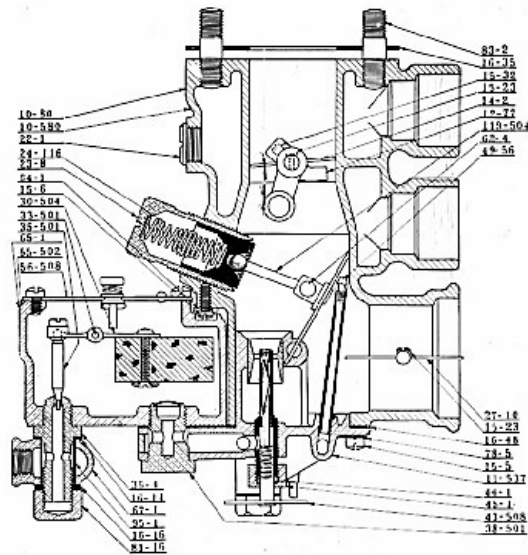
Set air screw so that the end is flush with the end of ratchet set spring. Loosen packing nut on needle adjustment. Turn gasoline adjustment to the right very carefully so as not to injure the needle point, until the valve is closed gently against its seat. Then turn to left approximately one complete turn which will bring notch in the disc handle directly below the guide post above it. Tighten packing nut to hold needle firmly as set.

The notch in disc handle of needle is put in handle after the needle has been carefully calibrated by a flow-meter at the factory, therefore the notch in handle should register with guide post above it. This setting of needle valve **is absolutely essential** to get the best results. The object in directing that needle be first turned to the right until closed is to insure against two or more turns open, as from closed position to notch (usually about one turn) is the normal setting. This being true it is not necessary to turn needle in to the right firmly but merely far enough to be sure that when turning back to the left, to the notch registering with guide post, that the needle is not more than once around or one turn from its seat.

Set stove heat and damper heat as previously instructed above. Pull out choker to closed position and start engine in usual manner. As soon as engine has fired release choker three-fourths of way in. Run until engine has warmed up then push choker all the way in, remembering to never use choker longer than necessary, as **when not needed** it has a tendency to foul up engine and ruin the lubricating oil in the crank case.

Next, set air screw for good idle by either turning to the right a little or backing out to the left as the needs of the engine require, remembering that **first of all, the needle must be set as described**. With the needle so set and the engine warmed up, the adjustment of the air screw for proper idling is easily accomplished by using a little care. If the air screw is turned in too tight, the motor will roll. If the air screw is not tight enough, the motor will hesitate and perhaps stop entirely. To make a nice clean adjustment for idle, first having set needle as described, turn air screw in quarter of a turn at a time until engine does roll; then turn back to the left until engine hesitates, indicating that mixture has too much air and is too lean; next turn air screw in to the right three or four notches at a time until engine runs smoothly. This accomplished (and it is very easy to do by proceeding as directed above) the proper adjustment for the entire range of the engine will have been attained, thus insuring the best economy and power.

MODEL "S" MARVEL CARBURETER



STANDARD EQUIPMENT
1923-24 Series 691 Nash Sixes

STANDARD EQUIPMENT 1923-24 Series 691 Nash Sixes

If the engine idles too fast with throttle closed, the latter may be adjusted by means of the throttle lever adjusting screw.

RICH MIXTURE

An over-rich mixture will cause the engine speed to fluctuate through more or less regular periods from high to low speeds; the engine will seem to be mis-firing and there will be noticeable a strong odor, as well as, usually, a heavy black smoke from the exhaust.

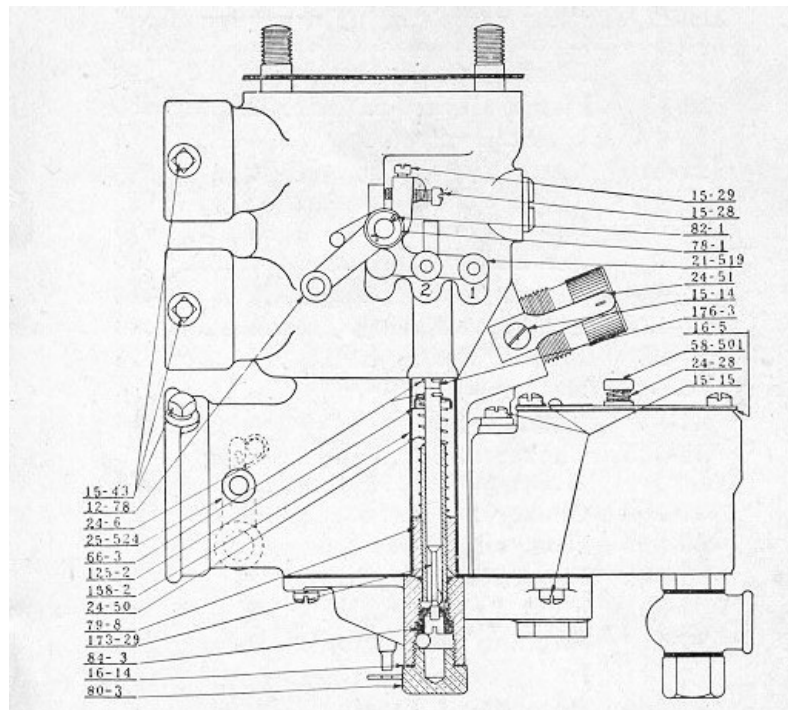
LEAN MIXTURE

The best adjustment is obtained with the fuel and air valves set as described. It must be remembered that too lean a mixture as well as an over rich mixture causes over-heating and loss of power and is not as economical as an adjustment which provides just the proper proportion of gasoline and air.

CAUTION

It must be remembered that the low speed needle has been carefully calibrated to notch in disc handle and guide post above it, at the factory and that in making an adjustment that the needle must be so set and the rest of the adjusting done with the air screw as described, never varying from described needle setting unless in extreme cold weather, when a little more gas may be carried, or turning off a little when casing head gas is used in hot weather.

MARVEL CARBURETER MODEL "S"



Nash Series 691 Sixes Parts Price List

Part No.	Name	Price
10-80	Carbureter Body	\$ 6.00
10-580	Carbureter Assembly	22.00
11-537	Insert Assembly	7.00
12-77	Accelerator Lever	.40
12-78	Throttle Lever	.40
14-2	Throttle Fly	.25
15-5	10×24×½ Insert Lock Screw	.05
15-6	Bowl Support Screw	.05
15-14	Ratchet Spring Screw	.05
15-15	Bowl Cover Screw	.05
15-23	Throttle and Choker Fly Screws	.05
15-28	Throttle Stop Adjusting Screw	.05
15-29	6-32×¼" French Head Screw	.05
15-32	Pilot Set Screw	.05
15-43	Square Head Set Screw	.05
16-5	Bowl Cover Gasket	.05
16-14	Strainer Gasket (fibre)	.05
16-16	Strainer Gasket (Copper)	.10
16-35	Flange Gasket	.10
16-48	Insert Gasket	.10
21-519	Throttle Stop Damper Control and Shaft Assembly	
22-1	Heater Jacket Plug	.20
23-8	Air Screw Shell	.50
24-6	Choker Spring	.15
24-116	Air Valve Spring	.30
24-28	Flusher Spring	.15
24-50	Metering Pin Spring	.15
24-51	Ratchet Spring	.15
25-524	Choker Shaft and Spring Assembly	.75
27-10	Choker Fly	.25
30-504	Float and Lever Assembly	.75
33-501	Float Shaft Assembly	.20
35-501	Float Valve Assembly	.45
36-4	Strainer Connection to Bowl	.40
38-501	Insert Connection Screw	.50
43-508	Gasoline Adjusting Needle Assembly	.50
44-1	Gasoline Adjusting Needle Packing	.10
45-1	Gasoline Adjusting Needle Packing Nut	.15
49-56	High Speed Jet	.30
56-508	Bowl Cover Assembly	.75
58-501	Flusher Assembly	.15
64-1	Bowl Support	.10

65-1	Brass Bowl	2.50
65-502	Brass Bowl Assembly	6.00
66-3	Metering Pin Lock Wire	.05
67-1	Strainer Body	.30
67-502	Strainer Assembly	1.00
78-1	Throttle Shaft Washer	.05
78-5	$\frac{3}{16}$ Lock Washer	.05
79-8	Metering Pin Housing Space	.20
80-3	Metering Pin Plug	.15
81-16	Strainer Nut	.15
82-1	Cotter Pin	.05
83-2	Manifold Stud	.05
84-3	Metering Pin Jet	.35
95-1	Strainer Gauze	.20
119-504	Dash Pot Plunger, Plunger Rod and Washer Assem.	.80
125-2	Metering Pin Spring Seat	.05
158-2	Metering Pin Housing	.15
167-502	Metering Pin Stem and Wire Assembly	.10
173-529	Metering Pin and Lock Wire Assembly	.45

REPLACEMENT FOR PREVIOUS MODEL NASH SIXES

The Model "S" Marvel Carbureter is interchangeable with the Model "K" Marvel Carbureter, which was standard equipment on the 1922 and 1923 Nash Sixes of the early 691 series.

The previous series 681 Nash Sixes of 1921, 1920, and 1919, which were equipped with the Model "E" Marvel Carbureter as standard equipment, can be very greatly improved by the installation of the Model "S" carbureter, exhaust damper body assembly necessary for same, and the hot air stove assembly that goes with this installation.

Following is the complete Parts Price List of the Model "S" carbureter, damper body assembly and stove parts for same. Notice is called to the fact again that the damper body and stove parts are not needed on the early 691 series of 1922 and 1923.

REPLACEMENT PARTS PRICE LIST For 1919-1922 Series 681 Nash Sixes

10-579	Carbureter and Heat Equipment Complete	\$30.00
Consisting of the Following Parts:		
Part No.	Name	Price
10-580	Carbureter Assembly	1 22.00
128-506	Damper Body and Stove Assembly	8.00
15-16	10×24× $\frac{3}{8}$ F.H. Machine Screw	1 .05
15-43	$\frac{1}{4}$ ×20× $\frac{1}{2}$ Std. Square Head Set Screw	2 .05
15-53	$\frac{5}{16}$ ×18×2- $\frac{1}{2}$ Cap Screw	1 .05
15-54	$\frac{3}{8}$ ×16×1 Standard Square Head Set Screw	2 .05
17-14	Exhaust Shut-off Valve Connecting Rod	1 .10
17-15	Damper Connecting Rod (Main Damper)	1 .20
19-2	Exhaust Manifold Damper Fly	1.00
19-9	Warm Air Stove Damper Fly	1
20-31	Stove Damper Fly Shaft	1 .10
24-31	Damper Fly Shaft Spring	1 .10
24-43	Stove Damper Fly Spring	1 .15
28-4	Connecting Rod Swivel	1 .25
62-5	Escutcheon Pin	1 .05
74-3	Exhaust Shut-off Valve	1 .15
78-4	$\frac{5}{16}$ Plain Washer	1 .05
81-26	$\frac{3}{8}$ ×16 Check Nut	2 .05
82-1	$\frac{1}{16}$ × $\frac{1}{2}$ Cotter Pin	2 .05
82-3	$\frac{1}{8}$ × $\frac{3}{4}$ Cotter Pin	3 .05
100-16	Warm Air Stove	1
100-17	Warm Air Stove	1
100-520	Warm Air Stove Assembly	1 1.50
122-503	Damper Lever and Shaft Assembly	1 1.00
122-504	Exhaust Shut-off Lever and Shaft Assembly	1 .40

123-1	Heat Tube Support Ring	1	.10
123-3	Damper Body Packing Stop Ring	1	.10
123-4	Exhaust Damper Body Packing Ring	1	.10
124-1	Heat Tube Collar	4	.20
125-1	Damper Shaft Spring Seat	2	.10
126-2	Heat Tube Outlet	1	.50
126-12	Heat Tube Inlet	1	.50
127-1	Heat Tube Packing	4	.10
127-2	Exhaust Damper Body Packing, per foot	1	.10
128-3	Exhaust Damper Body	1	3.00
128-506	Exhaust Manifold Damper Body and Stove Assembly	1	8.00
163-1	Choker Rod Extension		.10

MARVEL CARBURETER DISTRIBUTORS

Distributors who carry a complete stock of Carbureters and Parts and who are prepared to overhaul and rebuild Carbureters:

Marvel Carbureter Sales Co.,
335 Newbury Street, Boston, Mass.

Marvel Carbureter Sales Co.,
242 West 69th Street, New York, N.Y.

Marvel Carbureter Sales Co.,
2120 Fourteenth Street, N.W., Washington, D.C.

Marvel Carbureter Sales Co.,
6520 Carnegie Avenue, Cleveland, Ohio.

Marvel Carbureter Sales Co.,
1406 McGee Street, Kansas City, Mo.

Marvel Carbureter Sales Co.,
2119 S. Michigan Avenue, Chicago, Ill.

Marvel Carbureter Sales Co.,
926-928 E. Washington Street, Indianapolis, Ind.

Marvel Carbureter Sales Co.,
1138 Broadway, Denver, Colo.

Marvel Carbureter Sales Co.,
1837 South Flower Street, Los Angeles, Calif.

Edwards Warden Motor Parts Co.,
309-315 E. Broadway, Salt Lake City, Utah.

Fauver-Cavanagh Co., Inc.,
46-52 Canfield Avenue E., Detroit, Michigan.

McAlpin & Schreiner Co.,
1520 Tenth Avenue, Seattle, Washington.

Moloney Battery & Ignition Co.,
108-110 Wyoming Street, El Paso, Texas.

W.S. Nott Company,
Second Ave. N. & 3rd Street, Minneapolis, Minn.

Distributors who carry a complete stock of Carbureters and Parts:

Auto Supply Co., Inc.,
1107-1111 Broadway, Nashville, Tenn.

Herrick Hardware Co.,
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Joseph Schwartz Company,
729-735 St. Charles Street, New Orleans, La.

Shelton Motor Company,
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Wholesale Auto Supply House,
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