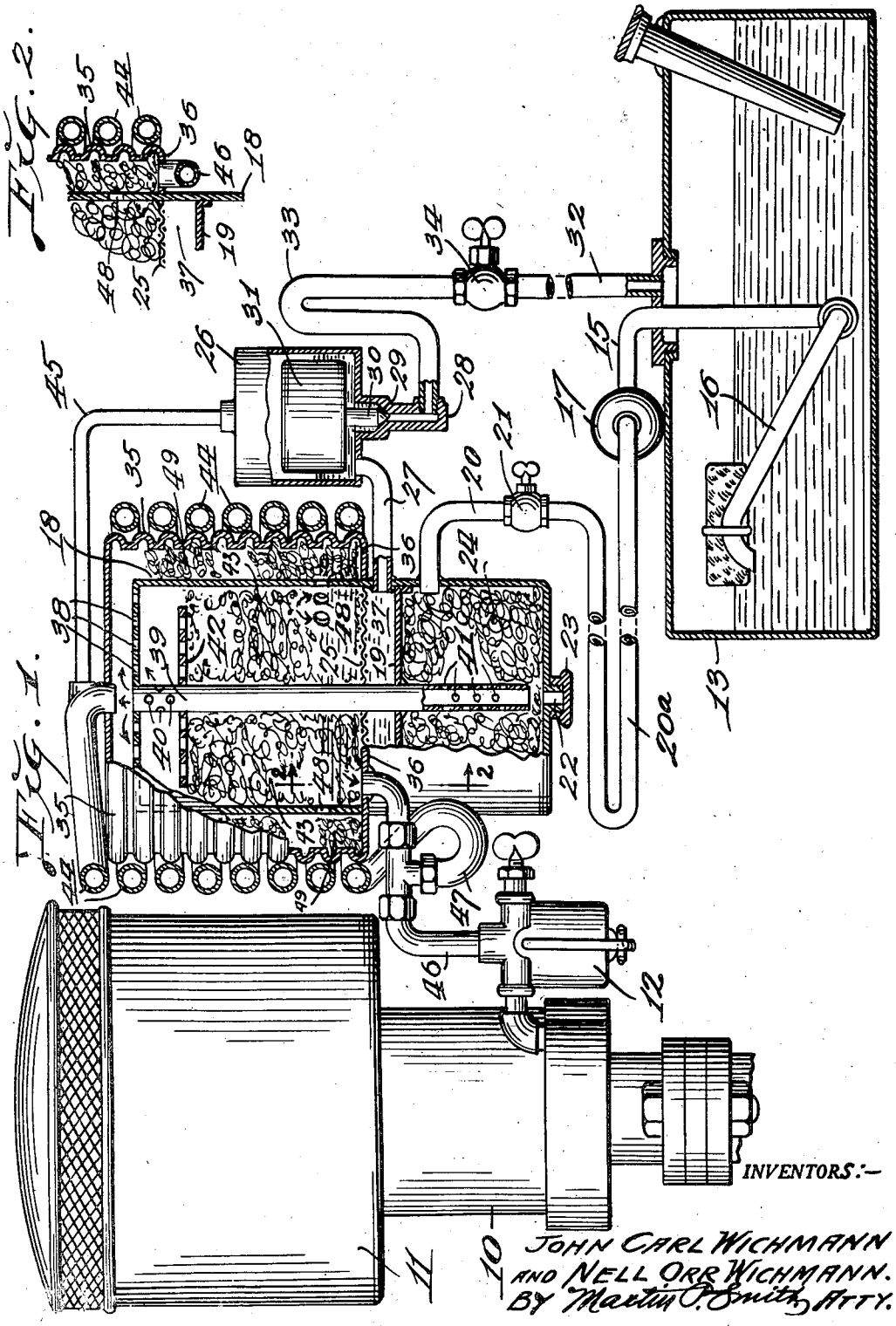
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GASOLINE CONSERVING AND POWER INCREASING ATTACHMENT

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## GASOLINE CONSERVING AND POWER INCREASING ATTACHMENT

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Our invention relates to a gasoline conserving attachment particularly designed for use in connection with the gaseous fuel supply systems of motors and has for its principal object, to provide a simple, compact, inexpensive device which will to a considerable extent convert the liquid hydrocarbon into vapor as it flows from the pump to the carburetor and, during such conversion, the gasoline being subjected to catalytic action so as to regroup the hydrocarbons and thereby materially increase the power development when the vaporized fuel is ignited in the combustion chambers of the engine.

Further objects of our invention are, to provide for smoother, more flexible engine operation, quicker acceleration, increased mileage of travel and absence of knock or "ping," particularly when lower grades of gasoline are being used.

A further object of our invention is to provide simple and efficient means for automatically controlling the volume and level of the liquid gasoline within the vaporizing chambers of the attachment.

With the foregoing and other objects in view, our invention consists in certain novel features of construction and arrangement of parts which will be hereinafter more fully described and claimed and illustrated in the accompanying drawing in which:

Fig. 1 is a vertical longitudinal section taken through the center of our improved attachment.

Fig. 2 is a detail section taken on the line 2—2 of Fig. 1.

Referring by numerals to the accompanying drawing which illustrates a preferred embodiment of our invention, 10 designates a carburetor, 11 an air filter, 12 the gasoline filter, and 13 a gasoline storage tank, all of which parts are conventional.

Associated with tank is the usual gasoline outlet pipe 15 having a float actuated section 16 within said tank, and said pipe 15 leads to a pump 17.

From the pump a tube 20, provided with a flow control valve 21 leads to the upper portion of the chamber in housing 18 below partition 19 and this tube is extended as designated by 20a to the exhaust manifold, so as to be heated thereby. Thus the gasoline flowing through said tube is heated so as to greatly increase the subsequent catalyzing and vaporization thereof.

The inlet end of pipe section 16 is connected to the float within tank 13.

The attachment contemplated by our invention includes a vertically disposed cylindrical housing

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18 which is divided into upper and lower chambers by an imperforate partition 19.

Leading from pump 17 to the upper portion of the chamber below partition 19 is a duct 20 having a flow control valve 21. A sediment outlet opening 22, formed in the bottom of housing 18, is normally closed by a cap 23, and the chamber within said housing below partition 19 is filled with copper or bronze wool or shavings 24. Cap 23 is removed only for the purpose of cleaning dirt and sediment out of the lower chamber in the housing.

Located in the chamber in housing 18 above partition 19 is a screen 25, and leading from the space between partition 19 and said screen to the lower portion of a small tank 26 is a tube 27.

Depending from tank 26 is a fitting 28 having a valve seat 29, and adapted to rest thereupon is the lower end of a valve 30 which depends from a float 31.

Leading from the lower portion of valve fitting 28 to tank 13 is duct 32 having an inverted U-shaped portion 33 which extends above the normal level of the gasoline in tank 26, and located in said duct between said portion 33 and the tank 13 is a flow control valve 34.

Surrounding the upper portion of housing 18, and spaced apart therefrom, is a shell 35, the vertical wall of which is corrugated to provide additional air cooling surface, and the annular bottom of this shell occupies approximately the same horizontal plane with the screen 25 and just above pipe 27.

The space 37 between partition 19 and screen 25 provides a gasoline collection chamber. The top of housing 18 is perforated as designated by 38, and extending axially downward from said perforated top is an ended tube 39 which passes through screen 25 and partition 19, and the lower end of said tube terminates just above the bottom of said housing 18.

The upper portion of this tube 39 is perforated as designated by 40, and that portion of said tube below partition is also perforated as designated by 41.

Positioned on tube 39 just below the perforations 40 is a perforated gasoline distribution plate 42, and filling the space between this plate and the screen 25 is a body 43 of copper or bronze wool or shavings.

Surrounding corrugated sheet 35 is a vapor cooling and condensing coil 44, the upper end of which communicates with the chamber between the top of said shell and the top of housing 18, immediately above the open upper end of tube

39 and leading from the upper end of this coil to the top of float tank 26 is a balancing tube 45.

Leading from the lower portion of the chamber between housing 18 and corrugated shell 35 to the filter 12 is a duct 46 (see Fig. 2), and connecting the lower end of coil 44 with this duct is a substantially U-shaped trap 47. The wall of housing 18, just above screen 25 and the annular bottom 36 of the corrugated shell 35, is perforated as designated by 48 through which gasoline flows into the chamber between housing 18 and shell 35 and from thence out through pipe 46 to filter 12.

The annular space between the walls of housing 18 and shell 35 contains copper or bronze wool or shavings 49.

During operation, pump 17 draws gasoline from the top of the liquid body in tank 13, through ducts 16 and 15 and forces said gasoline through duct 20 where it is vaporized by heat from the exhaust manifold of the motor and the resultant vapor passes into and through the body of copper or bronze wool, or shavings 24, and is thereby subjected to a certain catalytic action, thus to a considerable extent, regrouping the hydrocarbons in the gasoline, so as to greatly improve and increase the qualities thereof.

Any heated gasoline which is not entirely vaporized in tube 20 and which enters the lower portion of housing 18, accumulates in the bottom of the chamber in said housing, and such gasoline and vapor are under from two to five pounds pressure. Thus hot gasoline when entering the carburetor, where it is under further pressure, is readily broken up into extremely fine particles, and in such condition, it is drawn into the combustion chambers under vacuum and finally ignited so as to release power units.

The vaporized gasoline after passing upward through tube 39 discharges into the open upper end of copper coil 44, and in passing downwardly therethrough, said vapor is condensed into heated gasoline and unites with any heated gasoline that may flow upward through pipe 39 and discharge into coil 44.

Any liquid gasoline discharging from tube 39, which does not enter tube 44, passes back into housing 18 through apertures 38 and any gasoline which enters chamber between housing 18 and corrugated shell 35, flows downward through said chamber and finally enters chamber 37 after passing through apertures 48 and screen 25.

If this accumulation of gasoline in the chamber above partition 19 rises to the level of the apertures 48, then said gasoline will pass through pipe 27 into tank 26.

Any heated condensate (condensed gasoline vapor) accumulating in tank 18 above screen will flow through duct 46 to filter 12 and in so doing, it is joined by the heated condensate discharging from the lower end of coil 44 unto said duct 46.

In case there should be any vapor bubbles in this heated liquid gasoline delivered from coil 44, said bubbles will separate from the liquid in trap 47 and rise and escape back through duct 46 into housing 18, thus effectually preventing the formation of any vapor lock.

Any liquid gasoline discharging from the upper end of tube 39 will, by gravity, pass downward through perforations 38, thence through perforated plate 42 and thence downwardly through the body 43 of bronze or copper wool or shavings so as to be partially vaporized, and at the same time subjected to catalytic action, and said vapor will rise through housing 18 and pass therefrom into and through coil 44.



Practically this same vaporizing and catalytic action takes place in the copper or bronze wool or shavings-filled chamber between the upper portion of 18 and surrounding corrugated shell 35.

It is to be noted that both chambers within housing 18 and the chamber between shell 35 and housing 18, are practically filled with copper wool or shavings and thus all gasoline, either liquid or vapor form, that enters and passes through said chambers must make direct contact with the large bodies of copper wool or shavings, which contact brings about the catalytic action to effect the regrouping of the hydrocarbons so that development of power when the fuel is ignited is greatly increased.

And liquid gasoline which may flow downwardly through the copper wool or shavings-filled chambers will finally pass into chamber 37 between screen 25 and partition 19 and when the level of this accumulated gasoline rises within tank 26, it will flow past open valve 30 thence through duct 32 and open valve 34 back to gasoline storage tank 13.

Condensed vapor from the chamber between housing 18 and corrugated wall 35 may flow through duct 46 to join the condensate flowing from the lower end of the cooling coil 44 to and through said duct to filter 12 and to the carburetor.

If surplus gasoline collects in the chamber between screen 25 and partition 19, it will flow into the float chamber and from thence back to tank 13, and thus our improved attachment functions as a cushion between the float chamber, carburetor and pump so as to conserve gasoline consumption.

During operation a certain amount of gasoline will discharge from the end of tube 39 directly into coil 44 to be condensed therein, and any vapor discharging from fitting 47 will pass through duct 46 into the upper chamber within housing 18 to assist in further vaporization of gasoline and vapor passing therethrough.

Under all running conditions the volume of liquid within the attachment should fill chamber 37 and rise above the screen 25 and above the bottom 36 of the shell.

Actual use of our improved attachment throughout a period of several months has proven a substantial saving of gasoline, increased mileage with lower grades of gasoline without knocks or "ping," quicker acceleration and a more powerful and smoother running motor.

In our attachment, the excess gasoline which collects in the chamber above partition 19 is fed back to the gasoline tank through the automatically operating float-controlled valve, thus effecting a saving of gasoline which would otherwise be wasted.

Thus it will be seen that we have provided a gasoline conserving, power increasing, hydrocarbon motor, which is simple in structure, inexpensive of manufacture and very effective in performing the functions for which it is intended.

It will be understood that minor changes in the size, form and construction of the various parts of our improved attachment may be made and substituted for those herein shown and described without departing from the spirit of the invention, the scope of which is set forth in the appended claims.

We claim as our invention:

1. The combination with a carburetor and a

gasoline supply tank of a housing having upper and lower chambers, both containing bronze or copper wool or shavings, means for pumping gasoline from said tank to the lower chamber within said housing, a shell enclosing the upper portion of said housing both the upper and lower portions of said upper and lower portions of said upper chamber being in communication with the chamber, between said shell and housing, a tube leading from the space between the tops of said housing and shell to the lower chamber, a duct leading from the lower portion of chamber between said housing and said shell to said carburetor and a cooling and condensing coil leading from the top of said shell to the duct that leads to said carburetor.

2. The combination as set forth in claim 1 and the wall of which shell is corrugated.

3. The combination as set forth in claim 1, with a duct leading from the lower portion of said upper chamber to said gasoline tank, and valvular means controlled by the amount of gasoline in the lower portion of said upper chamber for controlling the flow of fluid through said duct.

4. The combination as set forth in claim 1, with a duct leading from the lower portion of said upper chamber to said gasoline tank; and automatically acting valvular means for controlling the flow of fluid through said duct.

5. The combination as set forth in claim 1 and a body of metal wool or shavings in the annular chamber between the walls of said housing and shell.



6. The combination as set forth in claim 1 and with a duct leading from the upper portion of said cooling coil to said tank.

7. The combination as set forth in claim 1, with a tube leading from the upper portion of said cooling coil to said tank and a duct connecting the lower portion of the upper chamber in said housing with said last mentioned duct.

8. The combination as set forth in claim 1, with a tube leading from the upper portion of said cooling coil to said tank, float controlled valvular means for controlling the flow of fluid through said last mentioned tube and a duct connecting the lower portion of the upper chamber in said housing with said valvular means.

9. The combination as set forth in claim 1 and with means whereby the gasoline is heated before being pumped into the attachment.

10. The combination as set forth in claim 1 and means for automatically maintaining a predetermined volume of gasoline within the lower portion of the upper chamber in the housing and in the lower portion of the chamber between said housing and shell.

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