

May 29, 1923.

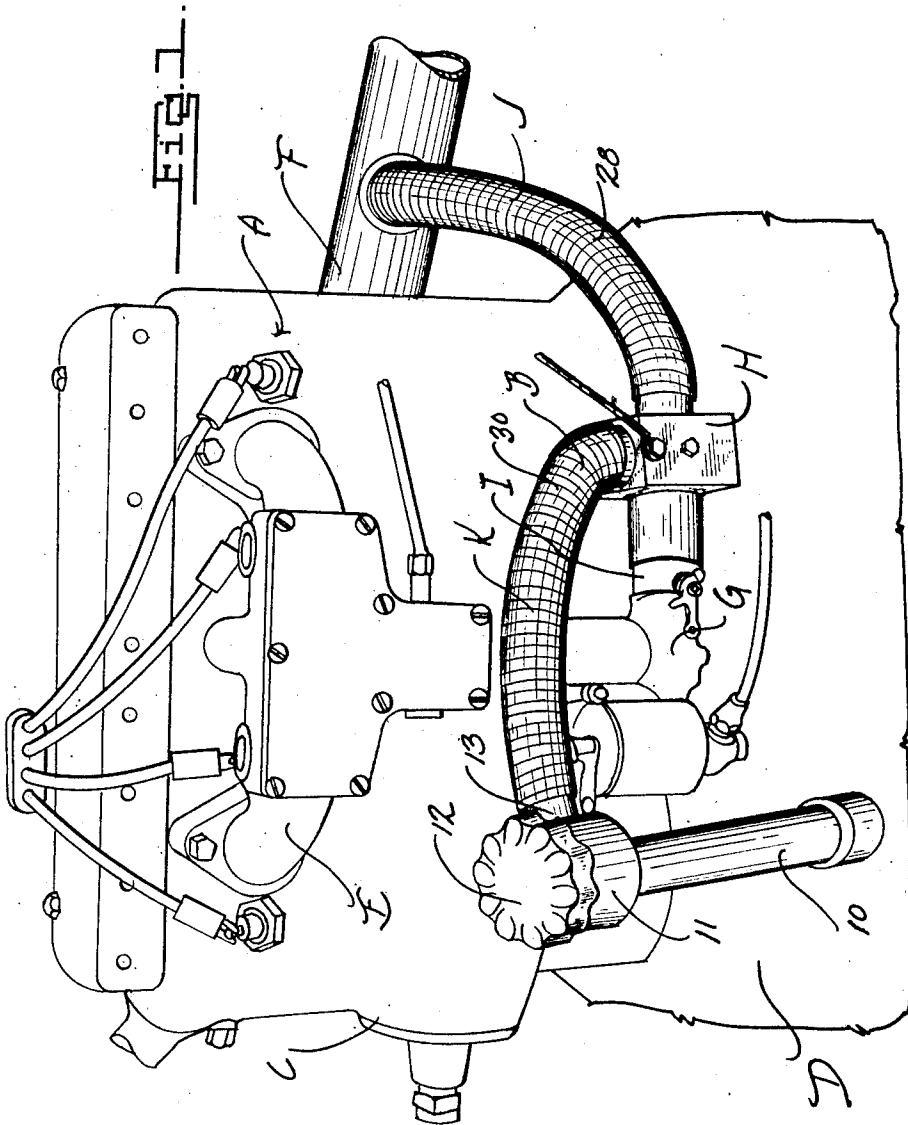
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H. T. RASMUSSEN

HEATER AND FUEL SAVER FOR AUTOMOBILES

Filed March 8, 1920

2 Sheets-Sheet 1



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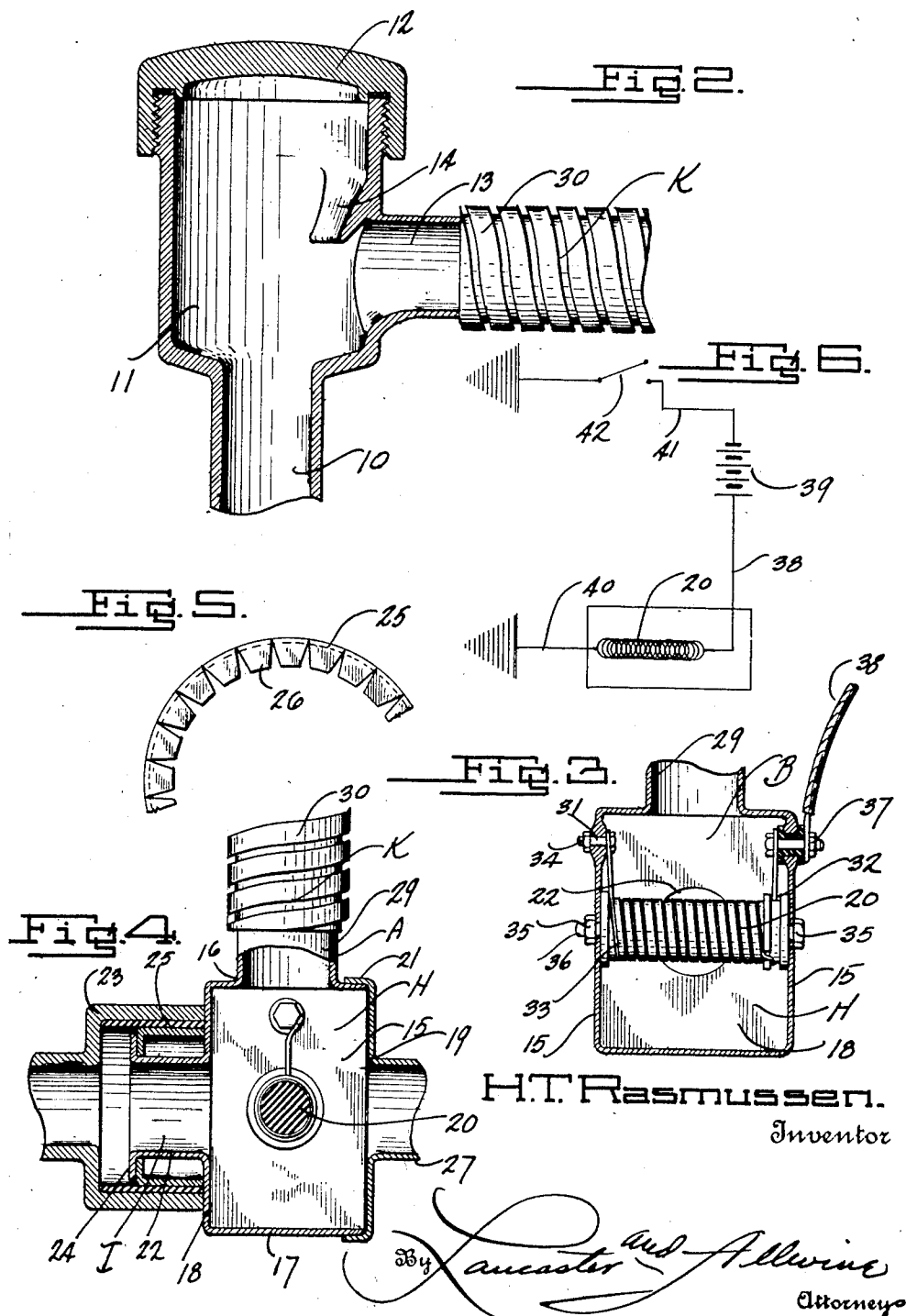
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UNITED STATES PATENT OFFICE.

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HEATER AND FUEL SAVER FOR AUTOMOBILES.

Application filed March 8, 1920. Serial No. 364,211.

To all whom it may concern:

Be it known that I, HARRY T. RASMUSSEN, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Heaters and Fuel Savers for Automobiles, of which the following is a specification.

This invention relates to attachments for internal combustion engines, and the primary object of the invention is to provide an improved means for introducing warm air into the carburetor so as to facilitate the vaporizing of the fuel, thereby resulting in a saving of the fuel and the easy starting of the engine in cold weather.

Another object of the invention is to provide an improved means for introducing the gaseous vapor in the crank case into the carburetor and for heating the said vapor, when so desired, before the entrance thereof into the carburetor.

A further object of the invention is to provide an improved attachment for internal combustion engines including a heater box having pipes for leading therein vapor from the crank case and warm air around or from the exhaust pipe, the box having communication with the carburetor for introducing the vapor and the warm air into the carburetor, the box also having means located therein for heating said mixture when starting the engine or the like.

A further object of the invention is to provide an improved attachment for internal combustion engines including means for withdrawing the hot gaseous vapor from the crank case of the engine and introducing the same into the carburetor for economizing the fuel and for retaining the oil in the crank case in a cool and favorable condition.

A still further object of the invention is to provide an improved means for attaching the electric heating coil in the box so that the vapor entering into the box will be thoroughly heated and broken into small particles.

A still further object of the invention is to provide an improved means carried by the box so as to facilitate the connecting thereof to different sized carburetors, thereby rendering it unnecessary to provide different sized boxes for different makes of motor vehicles.

A still further object of the invention is

to provide an improved attachment for motor vehicles of the above character which is durable and efficient in use, one that is simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost.

Other objects and advantages of the invention will appear in the following detailed description taken in connection with the drawings, forming a part of this specification, in which drawings:

Figure 1 is a fragmentary side elevation of an internal combustion engine showing the improved attachment applied thereto.

Figure 2 is an enlarged fragmentary detail vertical section through the oil intake pipe of the crank case, showing the means of attaching the improved device thereto.

Figure 3 is an enlarged fragmentary detail transverse section through the heater box.

Figure 4 is a longitudinal vertical section through the same.

Figure 5 is an enlarged fragmentary front elevation of the expanding ring used for connecting the box with the carburetor connection, and

Figure 6 is a diagrammatic view of the circuit for the electric heater.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A indicates an internal combustion engine, and B, the improved fuel saving and easy starting attachment therefor.

The internal combustion engine A may be of any preferred make, and includes the cylinder block C, the crank case D, the inlet manifold E, the exhaust pipe F and the carburetor G.

The improved attachment B includes the heater box H, the carburetor attaching device I, the crank case vapor conveying device K, and the hot air conveyor J.

The crank case D has communicating therewith the upstanding oil inlet filling pipe 10, to which the crank case vapor conveyor K is adapted to be attached. The upper end of this oil filling pipe 10 is enlarged as at 11 to form a vapor collecting chamber and the upper end of this chamber has detachably connected thereto the threaded cap 12. An outstanding nipple 13 communicates with the vapor collecting cham-

ber 11, and an overhanging lip 14 is carried by the upper end of the chamber and extends over the nipple, so as to prevent the pouring of the oil into the nipple during the filling of the crank case.

The improved vaporizing or heating box H includes a substantially rectangular casing having the side walls 15, the upper and lower walls 16, and 17, and the front and rear walls 18 and 19. The rear wall 19 may be detachably connected to the upper and lower walls if so desired, so as to permit repairs to the heating coil 20 which will be hereinafter more fully described. The rear wall is provided with inwardly extending flanges 21 which are adapted to frictionally engage the outer surfaces of the adjacent walls.

The outer or front wall 18 carries the centrally disposed outwardly extending nipple 22 which is adapted to be engaged by the connection 23 of the carburetor G. To permit the nipple 22 to be associated with various sizes of carburetor connections, the nipple 22 is provided with an outstanding annular retaining flange 24, which confines an annular expansion spring 25 in position. The expansion spring 25 is in the nature of a cylindrical sleeve and the forward end thereof is provided with a plurality of inwardly extending tongues 26, which are adapted to engage the inner surface of the annular retaining flange 24. The spring 25 is adapted to expand and frictionally engage the inner surface of the connection 23 and it can be readily seen that the spring can be expanded or contracted according to the diameter of the connection. The removable rear wall 19 also carries the centrally disposed rearwardly extending nipple 27, to which is attached the rearwardly extending flexible tube 28 forming the hot air conveyor J. The tube 28 can be of any desired diameter and is preferably of spirally wound metal in the ordinary manner. The opposite end of the flexible tubular member 28 is connected to the exhaust pipe F or an air heater connected to the exhaust pipe F, as the case may be. The upper wall 16 of the heater and vaporizer box H has formed centrally thereon the upstanding nipple or tubular sleeve 29, which has connected thereto the flexible tubular member which forms a portion of the crank case vapor conveyor K. The outer end of the crank case vapor conveyor K is connected to the nipple 13 as clearly shown in Figure 2 of the drawings.

Arranged transversely across the heater box H at the vertical axis thereof is the heater coil 20 which constitutes a means for vaporizing the air taken in through the conveyor K and for breaking up the vapor formed in the crank case into small particles. The heater 20 includes a porcelain spool 32 having a spiral groove 33 formed

therein in which is adapted to be positioned a high resistant wire 34, such as that made of Krupp metal.

The porcelain spool 32 is held against displacement by means of bolts 35 which extend through the side walls 15 and are held against displacement by suitable nuts 36. The terminals of the high resistant wire 34 are connected by the posts 37 secured to the side walls 15 of the casing. One of the binding posts 37 has connected thereto a wire 38, which leads to a storage battery or other suitable source of electrical energy 39. The opposite binding post 37 is connected by wire 40 which is grounded to the crank case. A wire 41 is connected to the opposite terminal of the battery 39 and this wire is also grounded to the crank case. The wire 41 has interposed therein a suitable switch 42 by means of which the coil can be thrown into or out of circuit with the storage battery.

From the foregoing description it can be seen that an improved attachment is provided for internal combustion engine in which heated air will be supplied to the carburetor so as to effectively vaporize the fuel and thereby facilitate the easy starting of the engine and permitting of a cheaper fuel being used such as kerosene and the like.

In operation of the improved device, the switch 42 is closed so as to throw the heating coil 20 into circuit with the battery 39 and the engine is then turned over in the ordinary manner. The gaseous vapors drawn into the box H from the crank case D and from the exhaust pipe F will pass around the coil 20 owing to the positioning thereof, which is arranged directly in front of the nipples 22, 27 and 29. These gaseous vapors will then be drawn into the carburetor. After the engine has been started and becomes heated, the heating coil 20 can be thrown out of circuit as the vapors will be heated by the engine.

Changes in details may be made without departing from the spirit or scope of my invention; but,

I claim:

1. The combination with an internal combustion engine including a crank case, a carburetor and an exhaust pipe, of an attachment therefor including a casing having communication with the carburetor, means for introducing gases into the casing accumulated from the exhaust pipe, means for introducing vapor from the crank case to the casing, an electric coil in the casing, a source of electrical energy, and means for connecting and disconnecting the electrical coil with the source of electrical energy.

2. The combination with an internal combustion engine including a crank case, a carburetor and an exhaust pipe, of an attachment therefor including a casing having

communication with the carburetor, a resistant coil arranged in the casing, means for connecting and disconnecting the resistant coil with the source of electrical energy, a
5 flexible pipe connecting the casing with the crank case for conveying the vapor from the crank case to the casing, a flexible pipe connecting the casing with the exhaust pipe, the said pipe communicating with the cas-
10 ing adjacent to the electric resistance coil.

3. The combination with an internal combustion engine including a crank case, a carburetor and an exhaust pipe, of an attachment therefor including a casing hav-
15 ing laterally extending nipples formed on certain of the walls thereof, a resistance coil arranged in the casing and located intermediate said nipples, a pipe for conducting gaseous vapors from the exhaust pipe direct
20 to one of said nipples, a second pipe directed to another of said nipples and communicating with the crank case, and a third pipe connected to the other of said nipples and communicating with the carburetor.

25 4. The combination with an internal combustion engine including a crank case having a filling pipe therefor, a carburetor and exhaust pipe, of an attachment for the engine including a casing having top,
30 bottom, side and end walls outwardly extending nipples carried by the top and end

walls and communicating with the casing, and electric coil carried by the side walls and arranged intermediate the nipples, a
flexible pipe connecting the oil filling pipe 35 and the nipple carried by the top wall, and a flexible pipe on the exhaust pipe for connecting the exhaust pipe with one of the nipples carried by one of the side walls, and a pipe communicating with the carburetor 40 and arranged around the other nipple carried by the other end wall, and an expansion ring carried by the last mentioned nipple for frictionally engaging the inner surface of
45 said pipe.

5. The combination with an internal combustion engine including a crank case, a carburetor and an exhaust pipe, of an attachment therefor including a casing, outward-
50 ly extending nipples carried by the casing, flexible pipes arranged to connect certain of the nipples with the exhaust pipe and crank case, a pipe for connecting the carburetor with another of said nipples, the
55 last mentioned nipple having an outwardly extending flange formed thereon, an expansion ring carried by the last mentioned nipple and confined between the casing and said flange, the carburetor pipe being adapted
60 to receive said last mentioned nipple and the expansion ring.

HARRY T. RASMUSSEN.