Dec. 26, 1939. L. W. MELCHER 2,185,035

EVAPORATIVE CONDENSER

Filed June 8, 1939 3 Sheets-Sheet 1

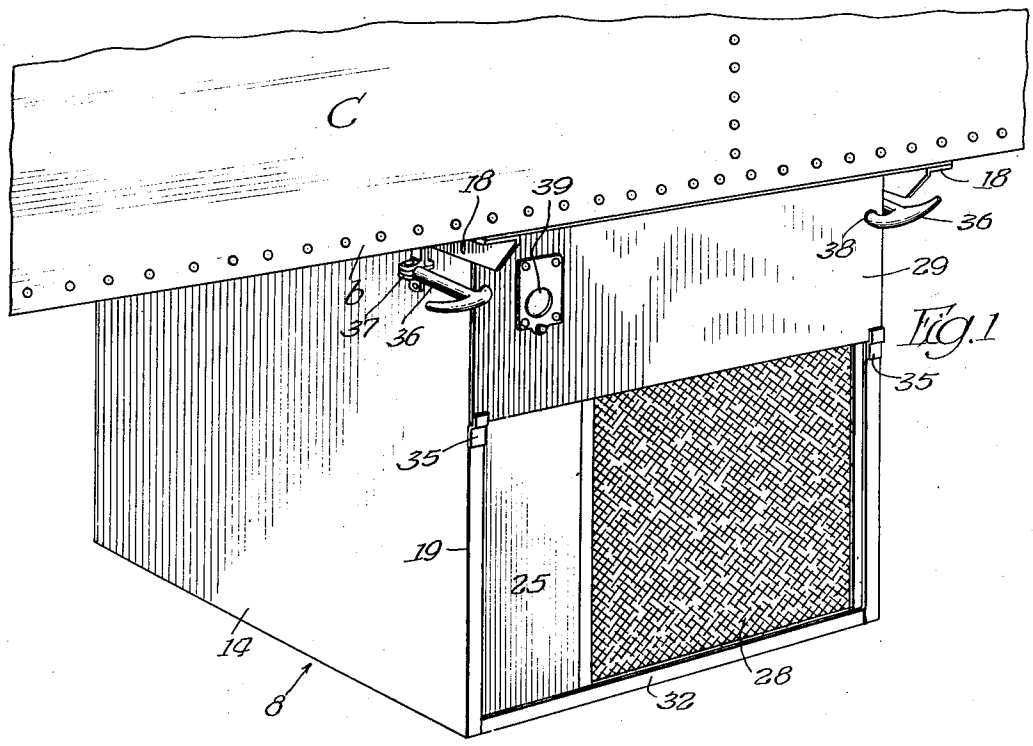


Fig. 1

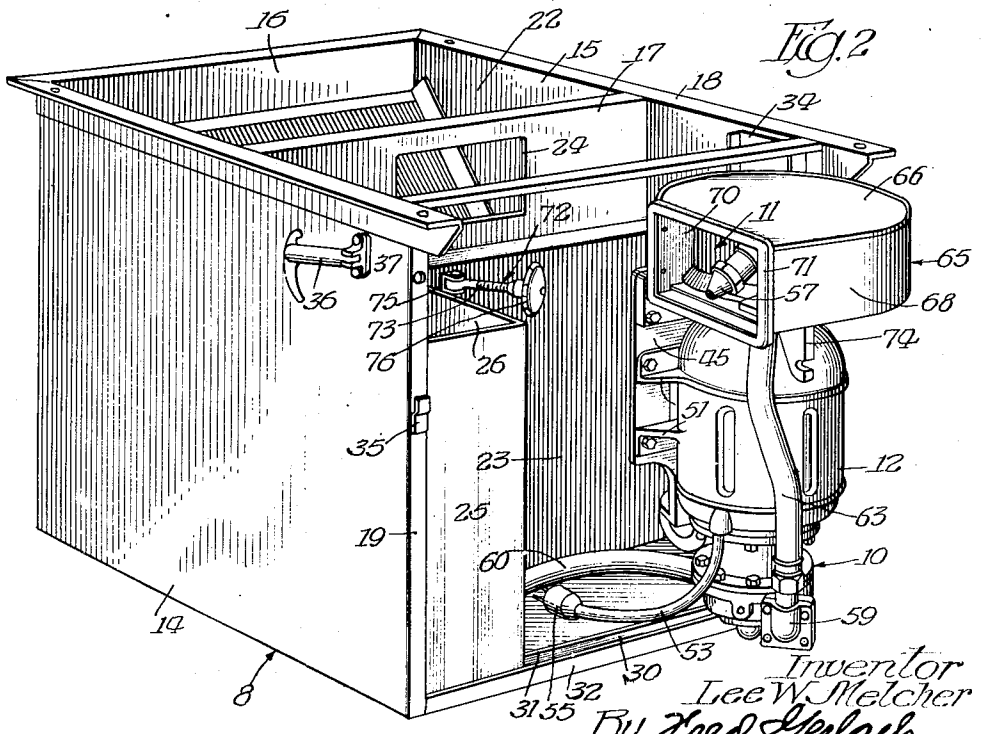


Fig. 2

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Fig. 3

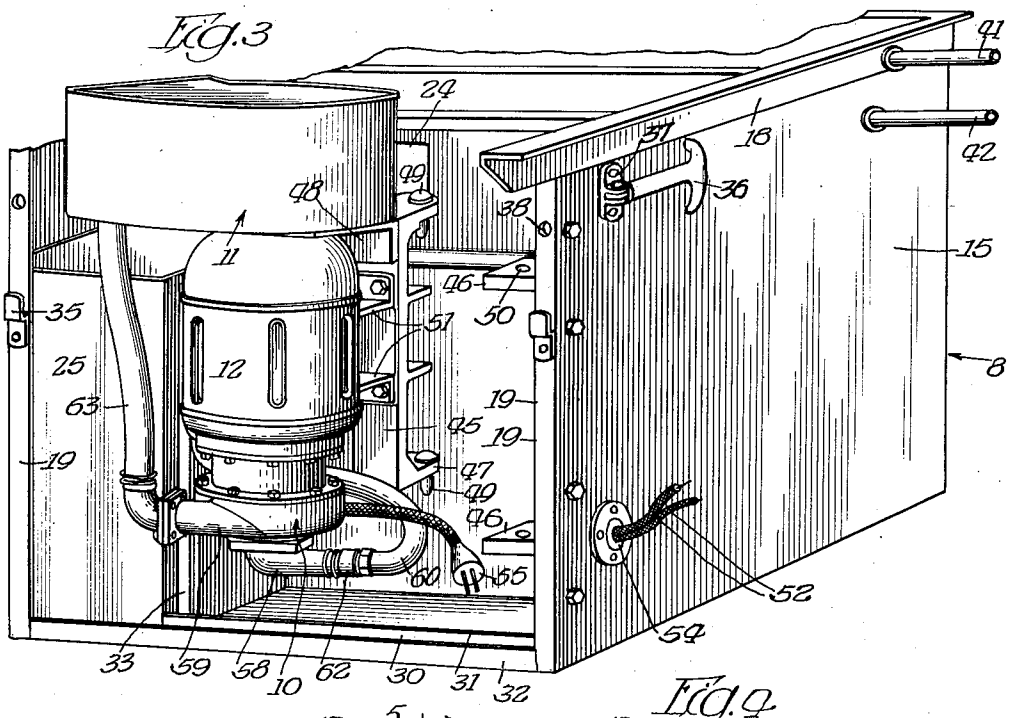
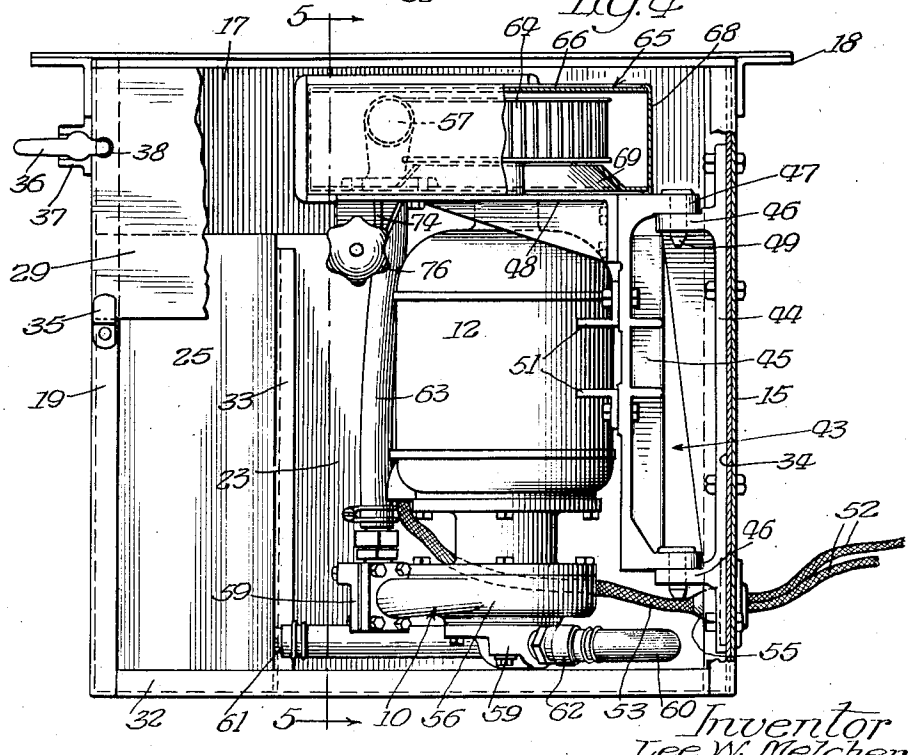


Fig. 4



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Fig. 5

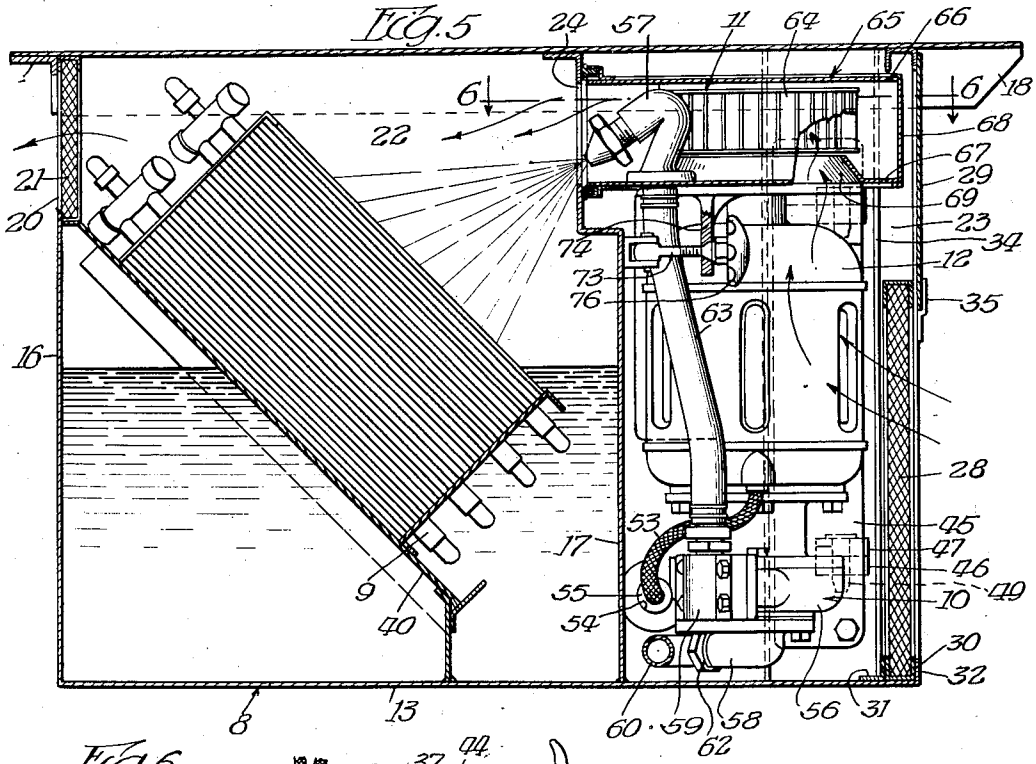


Fig. 6

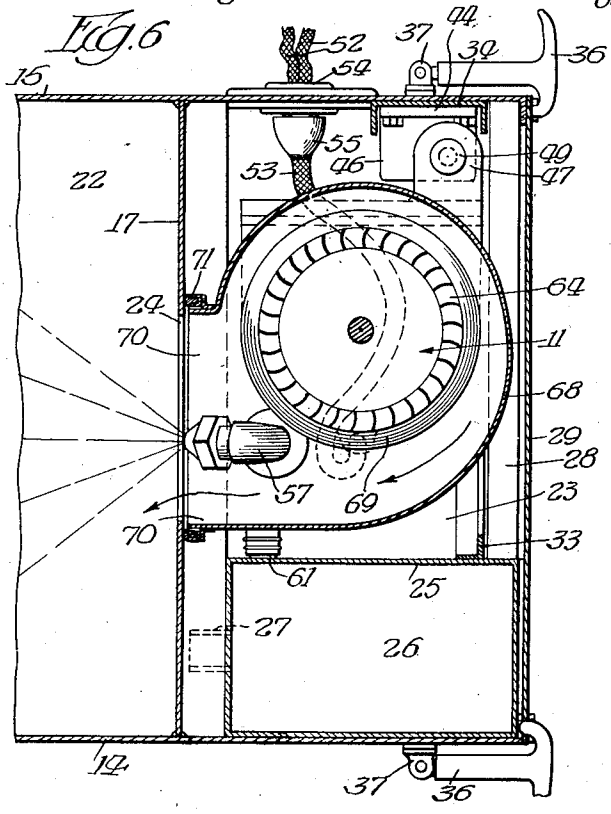
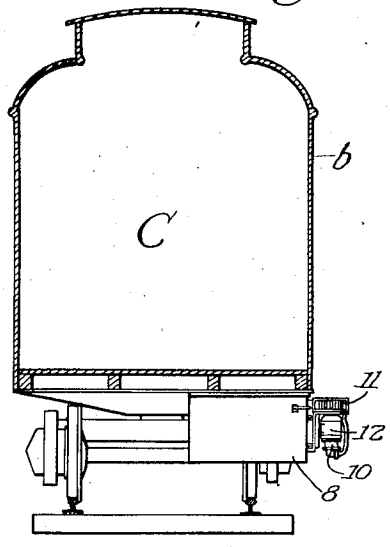


Fig. 7



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UNITED STATES PATENT OFFICE

2,185,035

EVAPORATIVE CONDENSER

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Application June 8, 1939, Serial No. 278,043

10 Claims. (Cl. 257—25)

The present invention relates generally to evaporative condensers. More particularly the invention relates to that type of evaporative condenser which is designed for use in the high pressure line of a vehicle body air cooling or conditioning apparatus and to be mounted under the vehicle body, and comprises as its main or principal parts a housing with a sump for water, a refrigerant coil in associated relation with the sump, a pump for drawing water from the sump and spraying or jetting it under pressure through a nozzle against the coil for purposes of evaporation, a fan for circulating air through the housing and past the coil, and an electric motor for conjointly driving the pump and fan.

One object of the invention is to provide an evaporative condenser of the type under consideration in which the housing has a partition therein to form at one side a compartment for the refrigerant coil and at the other side a compartment for the pump, fan and motor, and also has a releasable closure for the last mentioned compartment, and the pump, fan and motor are in the form of a unit and are so supported in the pump, fan and motor compartment that upon release or opening of the closure that may be shifted bodily out of their compartment into an inspection or repair position wherein they are exteriorly positioned with respect to the housing.

Another object of the invention is to provide an evaporative condenser of the last mentioned character in which the supporting means for the pump, fan and motor unit is in the form of readily detachable pivotal connections which upon swing or shift of the unit into the latter's inspection or repair position, permit the unit to be removed bodily for shop repair or replacement by a like unit.

A further object of the invention is to provide an evaporative condenser of the type and character under consideration in which the fan is of the casing and blade equipped rotor variety and the casing is so arranged that the outlet thereof registers with an opening in the partition in the casing when the pump, fan and motor unit is in its operative positon in the housing.

A still further object of the invention is to provide an evaporative condenser of the last mentioned type in which the nozzle for spraying or jetting the water against the refrigerant coil in the coil compartment of the housing is disposed or positioned in the outlet of the fan casing with the result that when the pump, fan and motor unit is in its operative position it serves to discharge the water from the pump through the opening in the partition and when the unit is in its inspection or repair position outside of the housing it is readily accessible for cleaning purposes.

In addition it is contemplated as one of the objects of the invention, the provision of an evaporative condenser which is light in weight and efficient in operation and occupies but a minimum amount of space.

Other objects of the invention and the various advantages and characteristics of the present evaporative condenser will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawings which accompany and form a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a perspective view showing an evaporative condenser embodying the invention in place or operative position under the bottom of the body of a railway car;

Figure 2 is a perspective view of the condenser showing the pump, fan and motor unit in its inspection or repair position outside the housing;

Figure 3 is a fragmentary perspective view of the condenser showing the housing without the closure means and in addition showing the pump, fan and motor unit after it has been detached and is in condition either for shop repair or replacement by a like unit;

Figure 4 is a front elevation of the condenser, parts being removed and other parts being broken away for purposes of illustration;

Figure 5 is a vertical longitudinal section taken on the line 5—5 of Figure 4 and illustrating the pump, fan and motor unit in its operative position;

Figure 6 is a horizontal section taken on the line 6—6 of Figure 5 and disclosing in detail the manner in which the outlet of the fan casing registers with the opening in the partition and the nozzle in the casing outlet operates to spray or jet water onto the refrigerant coil in the coil compartment; and

Figure 7 is a diagrammatic view showing the evaporative condenser in its operative position with respect to the bottom of the railway car body of Figure 1.

The evaporative condenser which is shown in the drawings constitutes the preferred embodi-

ment of the invention. It is illustrated beneath the bottom of the body *b* of a railway car C and is adapted to be included in the high pressure line of a refrigerating apparatus (not shown) for cooling or conditioning the air in the car body *b*. It is contemplated that the condenser be included in the high pressure refrigerant line between the compressor of the refrigerating apparatus and the receiver so that it serves to condense or liquefy the compressed refrigerant prior to its passage or flow through the expansion valve and evaporator of the apparatus. If desired, the condenser may be used as a sub-cooler or auxiliary condenser in connection with a refrigerating or air conditioning apparatus of the type which is shown in and forms the subject matter of United States Letters Patent No. 2,099,747, granted to me November 23, 1937.

As its main parts the condenser comprises a housing 8, a refrigerant coil 9, a pump 10, a fan 11, and a pump and fan driving electric motor 12.

The housing 8 is adapted to be positioned or located in a transverse position under the bottom of the car body *b*, as shown in Figure 7, and is preferably formed of plate or sheet metal. It is box-like or rectangular as far as shape is concerned and comprises a bottom 13, a pair of sides 14 and 15, a back 16, and a partition 17. The sides 14 and 15 are secured to and extend upwardly from the side margins of the bottom 13 and are provided at the upper margins thereof with longitudinally extending angle bars 18 whereby the housing 8 may be fixedly secured in place beneath the bottom of the car body *b*. The front margins of the sides are conterminous with the front margin of the housing bottom 13 and have inwardly extending full length flanges 19. The back 16 extends between the rear margins of the sides 14 and 15 and is suitably connected along the bottom margin thereof to the rear end margin of the bottom 13. An opening 20 is formed in the upper portion of the back 16 of the housing and this opening, as shown in Figure 5, is covered by a filter 21. The partition 17 is located in the front portion of the housing 8 and extends upwardly from the bottom 13 and between the sides 14 and 15. It terminates at its upper end adjacent to the angle bars 18 and defines with the back 16 and the rear portions of the bottom and sides a coil compartment 22. The partition 17 further defines with the front portions of the bottom 13 and the sides 14 and 15, a front compartment 23 for the pump, fan and motor. The upper portion of the partition 17 is rearwardly offset with respect to the lower portion and has a rectangular opening 24 whereby air under pressure from the fan 11 may be introduced into the coil compartment 22 for passage through said compartment and thence out of the housing by way of the filter covered opening 20. The lower portions of the partition back and sides define with the rear portion of the bottom 13 a sump for a column of water or other liquid. In addition to the partition 17, the housing 8 includes or comprises a second partition 25. This partition is positioned adjacent to the front portion of the housing side 14, as shown in Figure 6, and is shaped to form with such portion a tank 26. The latter is in communication with the sump in the bottom of the coil compartment 22 by way of a nipple 27 and serves as an auxiliary storage space for water. The front of the compartment 23 is normally closed by means of a rectangular air filter 28 and a plate 29. The air filter when in its operative position extends across the space between the tank forming partition 25 and the front margin of the housing side 15 and serves to admit filtered air into the compartment 23. The bottom of the filter 28 is adapted to fit within a horizontal channel 30 which, as shown in Figure 5, is formed by a horizontally extending angle bar 31 and an upstanding flange 32 along the front margin of the housing bottom 13. One of the side margins of the filter is adapted to fit against a vertically extending angle bar 33 on the outer face of the tank forming partition 25 and the other side margin of the filter is adapted to fit against one side flange of a vertically extending channel bar 34. The latter is welded or otherwise fixedly secured to the front portion of the side 15. The plate 29 serves when in its operative position to lock or secure the air filter 29 in place and is held or maintained in such position by a pair of brackets 35 on the upper portions of the flanges 19 and a pair of spring type hooks 36 on the upper front corners of the housing sides 14 and 15. The brackets 35 are adapted to surround or grip the bottom margin of the plate 29 and serve when the plate is in its operative position to hold it in place across the upper front portion of the compartment 23 and with the bottom margin thereof in lapped relation with the upper margin of the air filter 28. The hooks 36 are pivotally connected to a pair of brackets 37 and are adapted when in hooked relation with a pair of holes 38 at the ends of the plate releasably to clamp the plate in place with the end margins thereof against the upper portions of the flanges 19. When it is desired to have access to the compartment 23 it is only necessary to unhook the hooks 36 from the holes 38, and then remove the plate 29 and the air filter 28. Removal of the plate is effected by swinging it upwards out of seated relation with the brackets 35 and removal of the filter is effected by raising it out of seated relation with the channel 30 and then swinging or moving it forwardly. The filter 28 and the plate 29 constitute or exemplify releasable or removable closure means for the compartment 23. An opening 39 is formed in the plate 29 over the tank 26 in order to accommodate a water hose in connection with filling of the tank and sump.

The refrigerant coil 9 is serpentine in form and has fins or vanes for heat transfer purposes, as shown diagrammatically in Figures 2 and 5. It is disposed in the compartment 22 in the rear end of the housing 8 and is supported on a platform 40 so that it is upwardly and rearwardly inclined. The inlet end of the coil is adapted by way of a pipe 41 to receive compressed refrigerant from the compressor of the refrigerating apparatus with which the condenser is associated. The outlet end of the coil 22 is connected by a pipe 42 to the receiver of the apparatus in order that the refrigerant which is liquefied by the cooling effect of the sprayed or jetted water is delivered into the receiver prior to passage to the expansion valve and evaporator of the refrigerating apparatus. The two pipes 41 and 42 extend through holes in the housing side 15, as shown in Figure 3.

The pump 10, the fan 11, and the motor 12 are in the form of a unit normally disposed in the compartment 23 in the front end of the condenser housing 8. They are arranged in superposed relation, as shown in Figures 2 to 5, inclusive, of the drawings, and are carried by supporting

means 43 so that they may be swung in unit form from a normal operating position in the compartment 23 to an inoperative inspection or repair position wherein they are exteriorly positioned with respect to the housing, as shown in Figure 2. The supporting means 43 consists of a bracket 44 and a bracket 45 and is of the detachable pivotal or hinged variety so that the unit or assembly of pump, fan and motor may upon being swung into its inoperative position be removed bodily for repair or replacement purposes. The bracket 44 is in the form of a vertically elongated casting and is bolted to the web portion of the channel bar 34. It embodies at the ends thereof a pair of lugs 46 and these lugs, as shown in Figures 3 and 4, extend horizontally and project inwardly beyond the channel bar 34. The bracket 45 of the supporting means 43 is also in the form of a vertically elongated casting and embodies at the ends thereof a pair of vertically spaced laterally extending lugs 47. In addition to these lugs the bracket 45 includes a horizontally extending plate-like element 48. The lugs 47 bear against the lugs 46 of the bracket 44 when the two brackets constituting the supporting means are in connected relation and embody depending pins 49. These pins are shaped to fit within vertically extending holes 50 in the lugs 46 and constitute detachable pivotal or hinged connections between the two brackets 44 and 45 whereby the pump, fan and motor unit after removal of the air filter 28 and the plate 29 from the front end of the condenser housing 8 may be swung from its normal position into its inspection or repair position outside of the housing. As shown in Figures 3 and 4, the pins 49 are comparatively short and of slightly less diameter than the holes 50 with the result that when the pump, fan and motor unit is in its inoperative inspection position outside of the housing, it may be removed bodily from the bracket 44 merely by raising it in order to withdraw the lower ends of the pins from the holes 50. The plate-like element 48 is substantially aligned with and extends oppositely with respect to the uppermost lug 47. It is formed separately from the bracket 45 and is bolted or otherwise fixedly secured to the upper end of the latter.

The electric motor 12 extends vertically and underlies the plate-like element 48 of the bracket 45. It constitutes the driving medium for the pump 10 and the fan 11 and is connected to the central portion of the bracket 45 by way of a pair of vertically spaced saddles 51. The latter are fixedly secured to the casing of the rotor 12 and are bolted to the bracket 45. The upper end of the armature shaft of the motor extends through a hole in the plate-like element 48 and serves to drive the rotor of the fan 11. Current is supplied to the motor 12 by way of a pair of line conductors 52 and a duplex extension type conductor 53. The line conductors 52 lead to a socket 54 and this socket is suitably secured to the front portion of the side 15 of the condenser housing. The conductor 53 is connected at one end thereof to the field windings of the motor 12. The other end of the conductor is provided with a plug 55 for insertion in and connection to the socket 54. When the plug is in the socket the duplex conductor 53 is electrically connected to the line conductors 52 and a circuit for energizing the motor is established. The conductor 53 is preferably of such length that it need not be disconnected from the line conductors 52 when the motor and other parts of the unit are swung into their inoperative or inspection position outside of the housing. The plug and socket constitute a readily detachable electrical connection between the line conductors 52 and the duplex conductor 53 whereby the duplex conductor may be disconnected from the line conductors when the pump fan and motor unit is detached from the bracket 44 of the supporting means 43 either in connection with repair or replacement.

The pump 10 is of any suitable design and is positioned directly beneath and in coaxial relation with the electric motor 12. It comprises a rotor (not shown) and a casing 56 and serves when driven to draw water from the tank and sump and to deliver it under pressure to a nozzle 57. The rotor of the pump is keyed or otherwise fixedly secured to the lower end of the armature shaft of the motor 12. The casing 56 surrounds the rotor and embodies an inlet fitting 58 and an outlet fitting 59. The inlet fitting is positioned at the bottom of the pump casing and is connected by a flexible hose 60 to a nipple 61. The latter extends through the tank forming partition 25 and serves to connect the inlet end of the hose 60 to the tank so that water in the tank is permitted to flow in the pump casing during operation of the pump. The hose 60 is of such length that the pump, fan and motor unit may be swung into its inoperative inspection and repair position without the necessity of disconnecting the hose. The outlet end of the hose is connected to the fitting 58 by a union type coupling 62 so that the hose may be disconnected from the fitting when it is desired to detach or disconnect the unit from the bracket 44. The nozzle 57 is mounted on the plate-like element 48 of the bracket 45 and is so shaped and positioned that when the pump, fan and motor unit is in its normal or operative position it is in alignment with the opening 24 in the upper end of the partition 17 and faces in the direction of the serpentine refrigerant coil 9. It is of sufficient capacity to spray substantially all portions of the coil with water during operation of the pump and is connected to the outlet fitting 59 by a hose 63. The latter extends substantially vertically and is positioned alongside of the casing of the electric motor 12. When the pump 10 is in operation water is drawn from the sump and tank into the pump casing 56 and is forced under pressure via the hose 63 to the nozzle 57. When the water under pressure reaches the nozzle it is sprayed or jetted into the refrigerant coil 9 so that it serves in connection with evaporation thereof to cool the pipe and condense the refrigerant flowing therethrough.

The fan 11 is positioned above the electric motor 12 on the plate-like element 48 of the bracket 45 and operates when driven to draw air into the compartment 23 at the front end of the housing via the air filter 28 and to discharge the air under pressure so that it flows through the opening 24 in the partition 17 into the compartment 22 and thence past the coil 9 and to atmosphere via the filter covered opening 20 in the upper portion of the back 16 of the housing. It is positioned at the same elevation as the opening 24 and comprises a blade equipped rotor 64 and a sheet metal casing 65. The casing surrounds the rotor and consists of a top wall 66, a bottom wall 67, and a side wall 68. The bottom wall 67 embodies an enlarged inlet opening 69 and this opening surrounds the upper end of the armature shaft of the electric motor and is in communication with the interior of the com-

partment 23. The side wall 68 extends between the marginal portions of the top and bottom walls and has a rectangular outlet 70. The rotor 64 is keyed to the upper end of the armature shaft of the motor and operates when driven to draw air into the casing via the inlet opening 69 and to force the air under pressure from the casing through the outlet 70. The latter corresponds in size and shape to the opening 24 in the upper end of the partition 17 and is so arranged and positioned that when the pump, fan and motor unit is in its normal or operative position in the compartment 23 it registers with the opening 24. An elastic gasket 71 surrounds the outlet 70 and is designed to abut against the opening defining portions of the partition 17 and form a seal between the outlet and such portions when the unit is in its aforementioned normal or operative position. The nozzle 57 at the outlet end of the hose 63 is disposed in the fan housing 65 and is arranged so that it jets the water under pressure from the pump through the outlet 70 and the opening 24 onto or against the refrigerant coil 9. By having the nozzle so positioned it is readily accessible for cleaning or inspection purposes when the unit is swung into its inspection or repair position outside of the front end of the housing.

In order releasably to hold the pump, fan and motor unit in its normal or operating position, a latch 72 is provided. This latch is in the form of a bolt 73 and a slot equipped lug 74. The bolt is pivotally connected to a bracket 75 on the partition 17 and is provided with a nut 76. The lug 74 is formed integrally with and depends from the plate-like element 48 of the bracket 45 and is adapted to receive the bolt 72, as shown in Figure 5. In order to lock the unit in place the bolt is swung into the slot in the lug 74 and the nut 76 is tightened. As a result of tightening the nut, the unit is releasably clamped in its normal or operative position with the gasket 71 in abutment with the opening defining portions of the partition 17.

Assuming that the pump, fan and motor unit is in its normal position in the compartment 23 and the motor is connected to receive current from the line conductors 52, the operation of the apparatus is as follows: The pump, as hereinbefore described, serves to draw water from the sump and tank and to discharge such water under pressure through the nozzle 57 onto the coil 9. While the water is being sprayed onto the coil the fan operates to draw air from outside of the housing 8 into the compartment 23, via the air filter 28 and to discharge such air under pressure through the compartment 22 and past the coil. As a result of the evaporative effect of the sprayed water on the coil, the coil is cooled and thus causes or effects condensation of the refrigerant flowing therethrough. When it is desired to inspect the unit the plate 29 is first removed from the brackets 35 after releasing the hooks 36. Thereafter the air filter 28 is removed by raising it out of seated relation with the channel 30. After removal of the plate and air filter the nut 76 is loosened and the bolt 72 swung out of engagement with the lug 75. Such action releases the unit so that it is capable of being swung bodily out of the compartment 23 into its inspection or repair position. Should it be desired to remove the unit either for shop repair or replacement purposes, the plug 55 is removed from the socket 54 and the hose 60 is detached from the inlet fitting 58 of the pump housing 56 by disconnecting the coupling 62. After such steps the unit is raised in order to withdraw the pins 49 from the holes 50 in the lugs 46 of the bracket 44. Upon removal of the pins from the holes the unit is free and may be serviced or replaced. If the unit is to be replaced a replacement unit is mounted on the bracket 44 by inserting its pins into the holes 50 and then after insertion of the plug of the conductor for its motor into the socket 55 and connection of the hose 60 to the inlet fitting of the pump of the replacement unit, such unit is swung inwards and latched in place by the latch 72. Thereafter the air filter 28 and the plate 29 are shifted back into place in order to close the front end of the compartment 23. If the condenser is mounted in a transverse position under the bottom of a railway car body as shown in Figure 7, the pump, fan and motor unit is readily accessible when it is in its inspection or repair position outside of the housing due to the fact that it is positioned outwardly of the adjacent side of the car body.

The herein described evaporative condenser occupies but a small amount of space due to its compactness and is characterized by the fact that the pump, fan and motor are so mounted that they are readily accessible and in addition may be removed as a unit for shop repair or replacement purposes. The condenser is further characterized by the fact that but a single nozzle serves to spray the water onto the refrigerant coil and this nozzle may be readily cleaned or replaced after swinging of the pump, fan and motor unit into its inoperative position.

Whereas the condenser has been described as being primarily adapted for use in connection with a railway car refrigerating apparatus, it is to be understood that it may be used in other capacities or with other types of refrigerating apparatus. It is also to be understood that the invention is not to be restricted to the details set forth since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination with a vehicle having an enclosed body, an evaporative condenser mounted on the vehicle exteriorly of the latter's body and comprising a housing having an opening in one part thereof, a refrigerant coil in the housing, coil spraying means, a pump disposed normally in the housing and adjacent to said opening and adapted when driven to supply liquid through said spraying means onto the coil for cooling purposes, a motor also disposed normally in the housing adjacent to said opening and connected to drive the pump, and normal supporting means for the pump and motor on which the latter may be moved from their normal operating position in the housing through said opening into an inspection or repair position outside the housing.

2. An evaporative condenser comprising in combination a housing having an opening in one part thereof and embodying in another part a sump for water, a refrigerant coil in the housing, a pump disposed normally in the housing and adjacent to said opening, a flexible hose extending between and serving to connect the inlet or suction side of the pump and the sump, a nozzle connected to and in fixed relation with the discharge side of the pump and adapted when the pump is in its normal position and driven to discharge water under pressure from said pump onto the

coil for cooling purposes, a motor associated with and connected to drive the pump and disposed normally in the housing adjacent to said opening, and normal supporting means for the pump, nozzle and motor on which the latter may be moved from their normally operating position in the housing through the opening into an inspection or repair position outside the housing, said hose being of sufficient length to permit without disconnection thereof such movement of the pump, nozzle and motor.

3. An evaporative condenser comprising in combination a housing having an opening in one part thereof, a refrigerant coil in the housing, coil spraying means, a pump disposed normally in the housing and adjacent to said opening and adapted when driven to pump liquid through said spraying means onto the coil for cooling purposes, an electric motor associated with and connected to drive the pump and disposed normally in the housing adjacent to said opening, and readily detachable pivotal supporting means for the pump and motor whereby the latter may be swung from their normal operating position in the housing through the opening into an inspection or repair position outside the housing and there detached for replacement or other purposes.

4. An evaporative condenser comprising in combination an elongated housing having an opening at one end thereof and embodying a partition having a hole in the upper portion thereof and defining at one side thereof a compartment in communication with the opening and at its other side a second compartment, a refrigerant coil in said second compartment, a pump disposed normally in the first mentioned compartment adjacent said opening, means for connecting the suction side of the pump to a source of water supply, a nozzle connected to and in fixed relation with the pressure side of the pump and arranged so that when the pump is in its normal position it registers with the hole in the partition and faces in the direction of the coil, an electric motor in fixed relation with the pump and nozzle disposed normally in said first mentioned compartment adjacent to said opening and connected to the pump so that it operates to drive the latter in such manner as to cause it to draw water from the source and force it under pressure through the nozzle onto the coil, and normal supporting means for the pump and motor on which the latter together with the nozzle may be moved from their normal position in said first mentioned compartment through the opening into an inspection or repair position outside the housing.

5. In combination with a vehicle having a closed body, an evaporative condenser mounted on the vehicle exteriorly of the body and comprising a housing having an opening in one part thereof, a refrigerant coil in the housing, coil spraying means, a pump in the housing for pumping liquid through said spraying means onto the coil for cooling purposes, a fan disposed normally in the housing adjacent to said opening and adapted when driven to circulate air through the housing past the coil, an electric motor connected to drive the fan and also disposed normally in the housing adjacent to said opening, and normal supporting means for the motor and fan on which the latter may be moved from their normal operating position in the housing through the opening into an inspection or repair position outside the housing.

6. An evaporative condenser comprising in combination a housing having an opening in one part thereof, a refrigerant coil in the housing, a coil spraying nozzle, a pump in the housing for pumping liquid through the nozzle onto the coil for cooling purposes, a fan disposed normally in the housing adjacent to said opening and adapted when driven to circulate air through the housing past the coil, an electric motor connected to drive the fan and also disposed normally in the housing adjacent to said opening, and readily detachable pivotal supporting means whereby the fan and motor may be swung from their normal operating position in the housing through the openings into an inspection or repair position outside the housing and there detached for replacement or other purposes.

7. An evaporative condenser comprising in combination, an elongated housing having an opening at one end thereof and embodying a cross-partition having a hole in the upper portion thereof and denning at one of its sides a compartment in communication with the opening and at its other side a second compartment, means forming an outlet opening for said second compartment, a refrigerant coil in said second compartment, coil spraying means, a pump for pumping liquid from a liquid source through said spraying means onto the coil for cooling purposes, a fan of the casing rotor type disposed normally in the first mentioned compartment and arranged and designed so that when it is in its normal position the outlet of the casing thereof is in registry with the hole in the upper portion of the partition, an electric motor also disposed normally in said first mentioned compartment and connected to drive the fan so that the latter operates to draw air into said first mentioned compartment through the opening and to force such air under pressure through the second compartment, and means on which the fan and motor are normally supported and on which they may be moved conjointly from their normal operating position in the housing through said opening into an inspection or repair position outside the housing.

8. An evaporative condenser comprising in combination a housing having an opening in one part thereof, a refrigerant coil in the housing, coil spraying means, a vertically positioned electric motor normally disposed in the housing adjacent to said opening, a pump at the lower end of the motor connected to be driven by the latter and adapted when driven to pump liquid through said spraying means onto the coil for cooling purposes, a fan at the upper end of the motor connected to be driven by the motor and adapted when driven to circulate air through the housing past the coil, and normal supporting means for the assembly of motor, pump and fan on which it may be moved from its normal operating position in the housing through the opening into an inspection or repair position outside the housing.

9. An evaporative condenser comprising in combination an elongated housing having an opening at one end thereof and embodying a cross-partition provided with a hole in the upper portion and defining at one side thereof a compartment in communication with the opening and at its other side a second compartment, means forming an air outlet for the second compartment, a refrigerant coil in said second compartment, an electric motor disposed normally in the first mentioned compartment, a motor driven pump at one end of and in fixed relation with the motor, means for connecting the suction side of the pump to a source of water,

a nozzle in fixed relation with the pump and motor connected to the pressure side of the pump and arranged so that when the motor and pump are in their normal positions it registers with the hole in the partition and faces in the direction of the coil, a fan of the rotor casing type connected for operation by, and positioned at the other end of, the motor and having the outlet of the casing thereof surrounding the nozzle and arranged to register with the hole when the motor is in its normal position, and means on which the assembly of motor, pump, nozzle and fan is normally supported and on which it may be moved from its normal operating position in said one end of the housing through the opening into an inspection or repair position outside the housing.

10. In combination with a vehicle having an enclosed body, an evaporative condenser mounted under the body and comprising a housing with an opening adjacent to one side of the vehicle body, and a closure member for said opening, an assembly of pump, fan and fan driving motor disposed normally in the housing and adjacent to the opening, and adapted when in operation to spray liquid onto the coil for cooling purposes and at the same time to circulate air through the housing past the coil, and normal means for supporting the assembly so that upon opening of the closure member it is movable on said means from its normal operating position within the housing through the opening to an inspection position wherein it is disposed and supported outside of the housing and outwardly of said one side of the vehicle body.

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