April 30, 1935. E. C. JUERGENS 1,999,296

AIR PROPELLED CAR

Filed Feb. 16, 1932 3 Sheets-Sheet 1

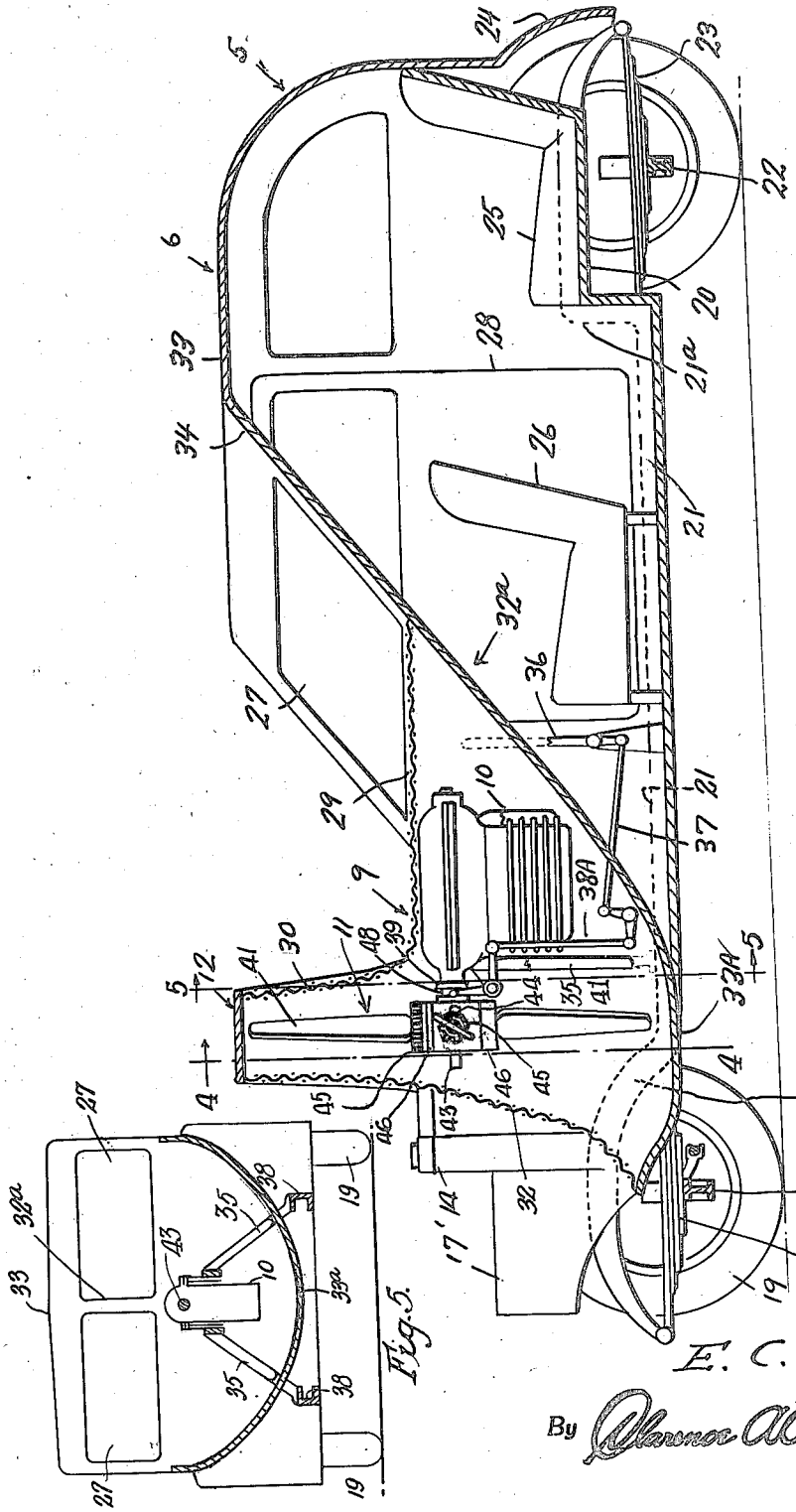


Fig. 1.

Fig. 5.

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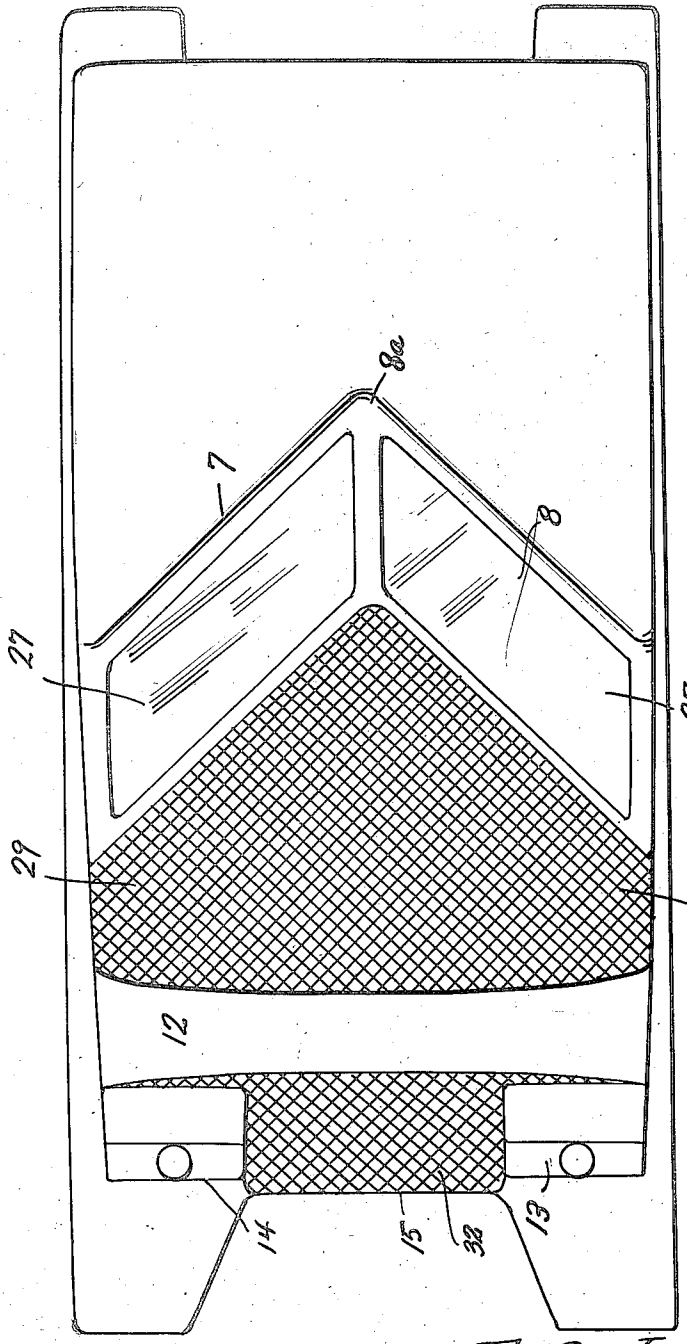


Fig. 2.

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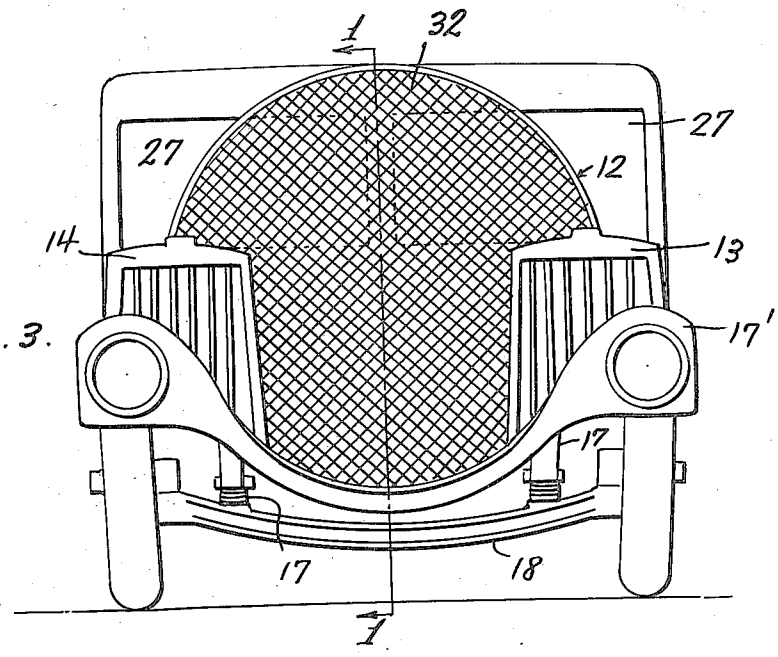


Fig. 3.

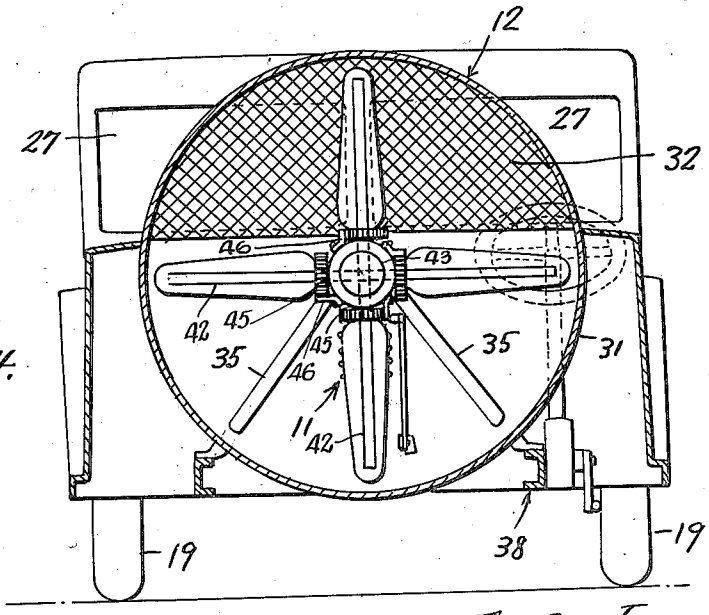


Fig. 4.

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1,999,296

UNITED STATES PATENT OFFICE

1,999,296

AIR PROPELLED CAR

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Application February 16, 1932, Serial No. 593,363

18 Claims. (Cl. 180—1)

My invention relates generally to motor vehicles, and particularly to a car driven by a motor driven air propeller mounted thereon.

It is an important object of my invention to provide an air propeller driven car of the type described which embodies novel features of construction and arrangement of parts, whereby efficiency and economy of operation is brought about.

It is also an important object of my invention to provide a novel body formation and a novel mounting of the motive power means including the air propeller.

It is also an important object of my invention to provide a structure of the type described embodying a new and novel manner of incorporating the air propeller and its motor, and accommodating the formation of the body so as to deflect the air stream of the propeller upwardly and over the body of the car.

It is also an important object of my invention to provide in a device of the character described above an adjustable pitch air propeller having reversible blades, the adjustment and reversing of the propeller blades being accomplished with a single lever arrangement.

Other objects and advantages of my invention will be apparent from a reading of the following description of the drawings wherein for purposes of illustration I have shown a preferred embodiment of the invention.

In the drawings:—

Figure 1 is a longitudinal vertical sectional view centrally through a preferred embodiment of the invention, and taken approximately on the line 1—1 of Figure 3 looking in the direction of the arrows.

Figure 2 is a top plan view thereof.

Figure 3 is a front end elevational view.

Figure 4 is a transverse vertical sectional view taken approximately on the line 4—4 of Figure 1 and looking in the direction of the arrows, and

Fig. 5 is a sectional view taken on the line 5—5, Fig. 1, disclosing the shape of the forward portion of the vehicle less the screen across the top and the operative parts for adjustably controlling the propeller.

Referring in detail to the drawings wherein like numerals relate to like parts throughout the same, the numeral 5 refers generally to the body of the device which is a combined passenger carrying compartment and chassis. The rearward portion of the body 5 may be of generally conventional type, but the forward portion has the V-shaped indentation, resulting in the forwardly diverging angular panels 7 and 8 which are slanted upwardly and rearwardly. As indicated by the numeral 8a the rearward edges of the panels 7, 8 meet and constitute the vertex of the V-shaped indentation. The forward edges of the panels 7, 8 are arranged near the sides of the body 5. The panels 7, 8 extend downwardly and forwardly to the bottom of the body to form a wind scoop and conveyor. The panels also define forwardly thereof a compartment generally designated 9 wherein is carried the inverted motor or engine 10 operatively connected with the reversible and adjustable propeller 11. A reticulated drum generally designated 12 extends transversely and vertically of the motor compartment 9 and forwardly of the motor or engine 10 as seen in Figure 1 and encloses the propeller 11. Immediately forward of the reticulated propeller drum 12 is a pair of radiators 13, 14 carried one on each side of the body so as to afford a wide space therebetween. It is to be noted that the motor compartment 9 is connected with the compartment within the front reticulated drum 12 and in which the propeller 11 is located, the compartment within the front reticulated drum 12 extending approximately to a point above the axle 18, as disclosed in Fig. 1 and as indicated by the numeral 15 in Fig. 2.

The forward end of the chassis frame 21 has a kick-up as indicated at 16, and the front fenders 17' extend forwardly over the wheels 19. Extending adjacent of the kick-up 16 are the usual front springs 17 mounted for carrying the axle 18 to accommodate conventionally mounted steerable wheels 19. The rear portion of the chassis frame indicated at 20 is upset as indicated at 21a whereby to mount in the correct low-slung manner the rear axle 22 which is carried on the usual springs 23. As seen in Figure 1 the rear end of the body may depend as indicated at 24 so as to partly cover the rear springs and their appurtenances. The bottom of the body 5 follows generally the contour of the chassis frame. A rear seat 25 may be mounted directly upon the upset portion 20, while the front seat 26 is mounted directly to the rear of the panels 7, 8 which are provided with windows 27. A suitable door opening as indicated at 28 may be provided in the side of the body for access to the passenger compartment.

A horizontal screen 29 extends on a level above the motor 10 between the reticulated drum and the panels 7, 8.

The reticulated drum 12 enclosing the propeller consists of a ring 31 having a reticulated screen 32 secured across and to its front edge and leading downwardly and forwardly to the point desig-

nated 15 in Figure 2 and to a point approximately above the axle 18 as disclosed in Figure 1. The upper part of the rear edge of the ring 31 has secured thereto and thereacross a reticulated screen 30 whose lower edge joins the forward end of the horizontal screen 29 which covers the motor compartment.

The wind resulting from the forward movement of the car and passing between and through the radiators 13, 14, and the air stream of the propeller 11, will be deflected and carried upwardly by the panels 7 and 8, forming the V-shaped scoop or conveyor, and over the car so as to reduce substantially the retardation effects which the combined wind and propeller air stream would otherwise have upon forward motion of the car. The entire body is of stream line construction so as to reduce as much as possible wind resistance consequent upon forward motion of the car.

The inclined wall section indicated at 32*a* in Fig. 1 is taken through the portion of the wall at the vertex of the panels 7 and 8 between the windows 27, the inclined wall section 32*a* also being taken through the portion of the wall of the vertex of the body portions which form the solid portions of the panels 7 and 8 below the windows 27, the panels 7 and 8 converging inwardly to form a trough, said panels 7 and 8 continuing downwardly and gradually blending into the wall portion 33*a* which further forms a closed bottom wall of the compartment 9, for enclosing the motor 10, and the drum 12, thus effectively guiding and controlling the flow of air through the drum 12 and the compartment 9 from passing under or through the body 5, the flow of air thus being guided to flow upwardly over the closed bottom wall of the compartment 9 and the drum 12 and over the panels 7 and 8 together with the windows 27 to the point 34 and thus over the top of the body 5, the flowing air being delivered in a wedge shaped mass to the upper wall or top surface of the body 5.

It is to be noted that my invention will reduce the usual retardation effects caused by the usual resistance of the rush of air against the conventional or substantially upright frontal surfaces of a vehicle body because the rush of air will be controlled to flow gradually upwardly thus resulting in a substantially reduced horizontal air thrust component on the body 5 as compared with a direct air thrust against the substantially straight or vertical frontal surface of a moving body. This reduced horizontal air thrust against the body 5 in my invention not only reduces the usual air resistance but is necessary to effectively control the increased thrust of air which is occasioned by driving a vehicle by an air propeller. Also the inclined positions of the panels 7 and 8 make it possible to control and maintain the body of flowing air in a wedge shaped mass to prevent said air from being forced off and around the sides of the body 5 which would render the vehicle impractical because of the disturbance of the dust, etc.

Though I do not desire to limit myself specifically to such, I prefer to employ an airplane type of motor, preferably the inverted air cooled type. This permits mounting the motor and the propeller upon aircraft type supports 35. The propeller is of the tractor type.

The propeller 11 is of a suitable adjustable pitch reversible type, controllable as to pitch and reversal by a suitable arrangement such as a hand lever 36 mounted within reach of the operator of the car and connected by means of links or the like 37, 38A to a slidable element 39 on the propeller-motor shaft of a character suitable to act as a clutch and also as a pitch changer and blade reverser of the propeller. It is capable of having a neutral disposition in which the propeller is operatively disconnected from the motor shaft.

As will be recognized from the drawings, the motor 10 is of the inverted air cooled type, or may be of a suitable type to fit properly within the motor compartment and to be partly cooled by the air stream of the propeller.

The motor 10 is supported by the members 35 which are suitably supported on the chassis and extend upwardly from their supported ends to connect with the motor 10.

The entire construction is such that light weight is achieved, together with stability and rigidity of structure. Obviously, less power is required to move a car constructed in the manner described than is required for conventional structures of this general nature. It will also be observed that where traction is a disadvantage rather than an essential as in the case of conventional motor vehicles, and this makes for economy of power required for propelling the same. A corresponding reduction in the size of power plant, with consequent reduction in fuel consumption and operating costs, is consequent upon the arrangements described above.

It will be observed that the maximum of vision for the operator of the car and the passengers is provided by the construction described.

It is believed to be obvious that the ordinarily essential features such as brakes, clutch transmissions, rear axles, differentials, and the like conventional appurtenances are not only not required, but are specifically done away with in my improved air propelled car. It will also be obvious that it will only be necessary to change the pitch of the blades of the propeller 11 for attaining different speeds with varying loads, and at varying engine speeds, so as to obtain the maximum speed and pulling power and provide for operating the car with the maximum economy of fuel. It will only be necessary to reverse the blades of the propeller without reversing the engine, to back up the car, the entire control of the propeller for these purposes being vested in the single hand lever 36.

The structure of the mechanism for adjustably controlling the operation of the blades of the propeller 11 is similar to the propeller adjustable mechanism disclosed and described in the U. S. patent for Screw propeller, issued on March 10, 1908 to R. E. Coon, Patent No. 881,775.

What is claimed is:—

1. In an air propelled car, the combination of a passenger compartment provided with a frontal surface having a V-shaped wall portion, a motor compartment forward of said passenger compartment, a propeller housing at the forward portion of said motor compartment, said propeller housing and said motor compartment having a common lower wall portion extending upwardly to blend into the V-shaped wall portion of said passenger compartment, a motor suitably mounted in said motor compartment, and a tractor air propeller rotatably mounted in said propeller housing for propelling the car, said tractor air propeller being operatively connected with said motor, said tractor air propeller producing a flow of air against said V-shaped wall portion, said V-shaped wall portion guiding said flow of air together with the flow of air developed

by the forward motion of the car upwardly and over the top surface of said passenger compartment.

2. In an air propelled car, the combination of a motor compartment, a propeller compartment, a motor suitably mounted in said motor compartment, a propeller rotatably mounted in said motor compartment, said propeller being operatively connected with said motor, a passenger compartment provided with V-shaped wall portions forming a trough for guiding a flow of air from said propeller upwardly and over the top of said passenger compartment, and means for varying the pitch of the blades of said propeller to change or reverse the pulling power of said propeller.

3. In an air propelled vehicle comprising a chassis and a body having wall portions, the combination of a tractor propeller on the chassis and enclosed by said wall portions of said body, a motor operatively connected with and for driving said tractor propeller, means for controlling the driving connection between said motor and said tractor propeller, and scoop means formed by wall portions, said wall portions extending from a point adjacent the bottom of said tractor propeller and upwardly to the top of the vehicle, said scoop means receiving and conducting the combined air stream of the propeller and wind resulting from the forward motion of the car upwardly to the top of the vehicle.

4. An air propelled car of the type described comprising a chassis, an enclosed tractor propeller on the chassis, a motor operatively connectible to drive the propeller, controllable operating connection means for connecting the propeller to the motor, and scoop means to the rear of the propeller for receiving, confining, and conducting upwardly over the car the combined air stream of the propeller and wind resulting from forward motion of the car, said scoop means comprising upwardly and rearwardly leaning surfaces of wall members suitably supported on the chassis, adjacent surfaces of said wall members being related to each other at an angle for forming a trough, said wall members being joined together at the vertex of the angle forming said trough.

5. An air propelled car of the type described comprising a chassis, an enclosed tractor propeller on the chassis, a motor operatively connectible to drive the propeller, controllable operating connection means for connecting the propeller to the motor, and scoop means to the rear of the propeller for receiving, confining, and conducting upwardly over the car the combined air stream of the propeller and wind resulting from forward motion of the car, said scoop means comprising upwardly and rearwardly leaning surfaces of wall members, adjacent surfaces of said wall members being related to each other at an angle for forming a trough, and a passenger compartment to the rear of the scoop means, said passenger compartment being closed, at its forward end, by said wall portions of said scoop means.

6. An air propelled car of the type described comprising a chassis together with a body, an enclosed tractor propeller on the chassis, a motor operatively connectible to drive the propeller, controllable operating connection means for connecting the propeller to the motor, and scoop means to the rear of the propeller for receiving, confining, and conducting upwardly over the car the combined air steam of the propeller and wind resulting from forward motion of the car, said scoop means comprising upwardly and rearwardly leaning surfaces of wall portions of said body, adjacent surfaces of said wall portions being related to each other at an angle for forming a trough, said wall portions of said scoop means being extended forwardly of and under the motor and propeller to join the wall portions of the enclosure of said tractor propeller.

7. In a vehicle comprising a chassis, the combination of supporting members suitably supported on said chassis and extending upwardly from their supported ends, an engine provided with cylinders, said engine being mounted on said supporting members, the cylinders of said engine being located at the lower side of said engine, a propeller suitably mounted on said engine, the axis of said propeller being located adjacent the end of the portion of said engine located above its cylinders, said propeller being operatively connected with said engine, and a body suitably supported on said chassis, said body being provided with a forward wall portion extending under and adjacent the lower side of said cylinders of said engine and said propeller to guide the air flowing from said propeller upwardly adjacent the sides of said cylinders and over said body.

8. In a vehicle comprising a chassis, the combination of a body suitably mounted on the chassis of the vehicle, said body being provided with a passenger compartment together with a second compartment adjacent said passenger compartment, said body being provided with a dividing wall portion between said passenger and said second compartments, said dividing wall portion being inclined downwardly from the top of said body to the bottom of said body at a point between and under the ends of said second compartment an engine suitably mounted in said second compartment, and a propeller suitably mounted and operatively connected with said engine, said propeller inducing a flow of air adjacent said dividing wall portion of said body.

9. In a vehicle comprising a chassis, the combination of a body suitably mounted on the chassis of the vehicle, said body being provided with a passenger compartment having bottom and side walls, a second compartment adjacent said passenger compartment, the lower wall of said second compartment being formed by a continuation of the lower closed wall of said passenger compartment, said body being provided with a dividing wall member between said passenger and said second compartments, said dividing wall member being inclined downwardly from the top of said body to its lower closed wall, an engine suitably mounted in said second compartment, and a propeller suitably mounted and operatively connected with said engine, said propeller inducing a flow of air adjacent said dividing wall member.

10. In a vehicle, the combination of a passenger compartment provided with a pair of wall members inclined from the top toward the bottom of said passenger compartment, said pair of wall members being further inclined to each other to form a trough therebetween, and means for inducing a flow of air over said body, said air flowing longitudinally in the trough formed by said pair of wall members of said body.

11. In a vehicle, the combination of an engine compartment provided with a semi-circular shaped lower wall, a passenger compartment adjacent said engine compartment, said passenger compartment being provided with a pair of wall members forming a dividing wall between said

engine and said passenger compartments, said pair of wall members being inclined from the top of said passenger compartment to the semi-circular shaped lower wall of said engine compartment, said pair of wall members being further inclined relative to one another to form a trough therebetween, the trough formed by said pair of wall members gradually blending into the semi-circular shaped lower wall portion of said engine compartment, an engine suitably mounted in said engine compartment, and a propeller suitably mounted and operatively connected with said engine, said propeller developing a flow of air longitudinally of the trough formed by said pair of wall members of said passenger compartment.

12. In a vehicle comprising a frame together with front and rear axles, the combination of a body having a lower wall extending over said front and rear axles, said lower wall being provided with upset portions extending upwardly over said front and rear axles, said body being provided with an inclined wall portion extending from the top of said body to the portion of said lower wall extending between its upset portions over said front and rear axles, a compartment adjacent the front axle and said inclined wall portion of said body, and means for inducing a flow of air adjacent said inclined wall portion and over the top of said body, said means being suitably mounted in said compartment between said upturned portions of said body.

13. In an air propelled vehicle, the combination of a drum member having its axis extending longitudinally of the vehicle, screen members suitably attached to two sides of said drum member, a body having an inclined wall portion extending downwardly from its top to a point under one of said screen members, said one of said screen members being suitably attached to said inclined wall portion of body, a propeller suitably mounted in said drum member and adapted to induce a flow of air adjacent said inclined wall portion of said body, and means for driving said propeller.

14. In an air propelled vehicle, the combination of a body provided with an inclined wall portion connecting the top and bottom walls of said body, said wall portion comprising a pair of panel members inclined relative to one another to form a trough therebetween, a drum member suitably connected with the lower portion of said body, said drum member having open ends, an engine suitably mounted adjacent said inclined wall portion, a propeller suitably mounted in said drum member, said propeller inducing a flow of air adjacent said inclined wall portion of said body, said propeller being operatively connected with said engine, and screen members closing the open ends of said drum member, said screen members extending adjacent said engine and said propeller.

15. In an air propelled vehicle, the combination of a propeller suitably mounted, a drum shaped compartment having a solid wall extending around the periphery of said propeller, screen members attached to opposite sides of said drum shaped compartment and extending adjacent the sides of said propeller, a body suitably mounted and having an inclined wall portion extending from the top of said body to connect with the solid wall of said drum shaped compartment at a point below said propeller, said inclined wall being suitably connected with one of said screen members, said inclined wall being provided with a trough portion for receiving and guiding a flow of air from said propeller over said body, and means suitably mounted for driving said propeller, said means being suitably mounted between one of said screen members and said inclined wall portion of said body.

16. In an air propelled vehicle, the combination of an engine suitably supported by the vehicle, a propeller suitably mounted and operatively connected with said engine, a body suitably mounted adjacent said engine and provided with a bottom wall extending below and beyond said propeller, said body being provided with an inclined wall portion extending from the top of said body to connect with the bottom wall of said body at a point substantially adjacent said propeller, said inclined wall portion extending adjacent said engine, said inclined wall portion being provided with a trough portion for conducting air away from said propeller, a housing member suitably connected with said bottom wall of said body and extending around said propeller, said housing member being provided with open ends, a screen member suitably attached around one of the open ends of said housing member, said screen member extending to and being suitably connected with the portion of said bottom wall of said body extending below and beyond said propeller, and a second screen member suitably attached around an open end of said housing member and extending to and being suitably attached to said inclined wall portion of said body, said second screen member extending over said engine.

17. In an air propelled vehicle, the combination of an engine suitably supported by said vehicle, a propeller suitably mounted and operatively connected with said engine, a body suitably mounted adjacent said engine and provided with an inclined wall portion extending substantially adjacent said engine and adapted to guide a flow of air, induced by said propeller, over said body, said body being further provided with a wall portion suitably connected with said inclined wall portion and extending under said propeller, a drum member suitably connected with one or more of said wall portions of said body, said drum member extending around the periphery of said propeller, said drum member having a pair of open ends, a screen member suitably attached to said drum member around one of its open ends, said screen member extending from said drum member to one of said wall portions of said body, said screen member being substantially angularly inclined relative to said propeller, and a second screen member suitably attached to said drum member around the other of the open ends of said drum member, said second screen member being provided with a portion extending substantially parallel with the axis of said propeller, said last mentioned portion of said second mentioned screen extending over said engine and being suitably connected with said inclined wall portion of said body.

18. In an air propelled vehicle, the combination of a body suitably mounted and provided with a pair of wall portions inclined relative to the longitudinal center of the vehicle, said pair of wall portions being further inclined relative to each other to form a trough adapted to guide a flow of air over said body and means for inducing a flow of air along said trough portion of said body.

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