I. C. HAVENS.

AUXILIARY PROPELLER FOR MOTOR VEHICLES.

APPLICATION FILED FEB. 11, 1918.

1,298,703.

Patented Apr. 1, 1919.

2 SHEETS—SHEET 1.

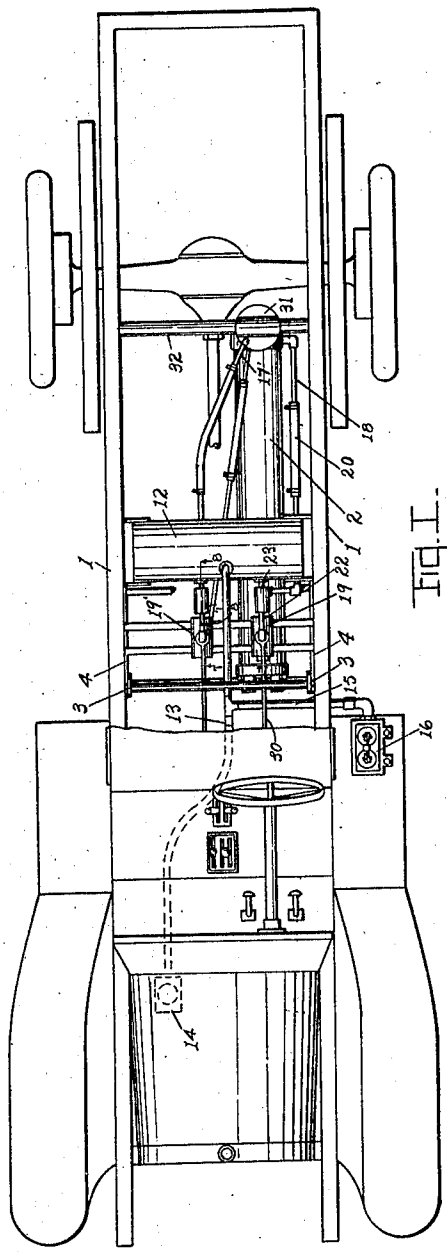


Fig. I.

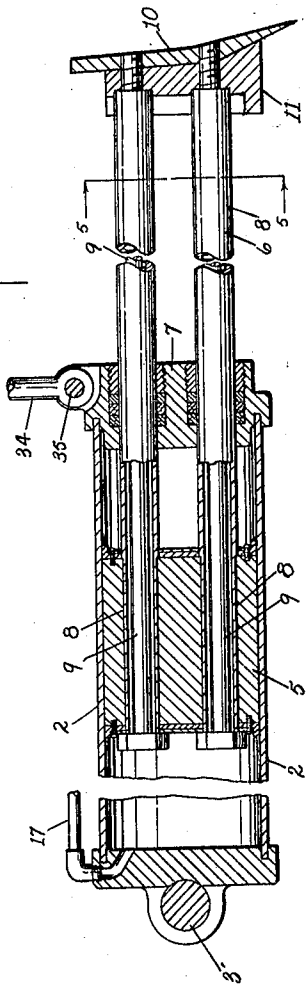


Fig. III.

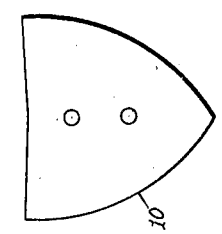


Fig. IV.

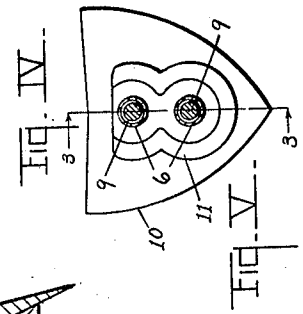


Fig. V.

Inventor

IRA C. HAVENS.

Witnesses

Lewis Gilman

M. Louise Thurston

By Chappell & Earl

Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

I. C. HAVENS.

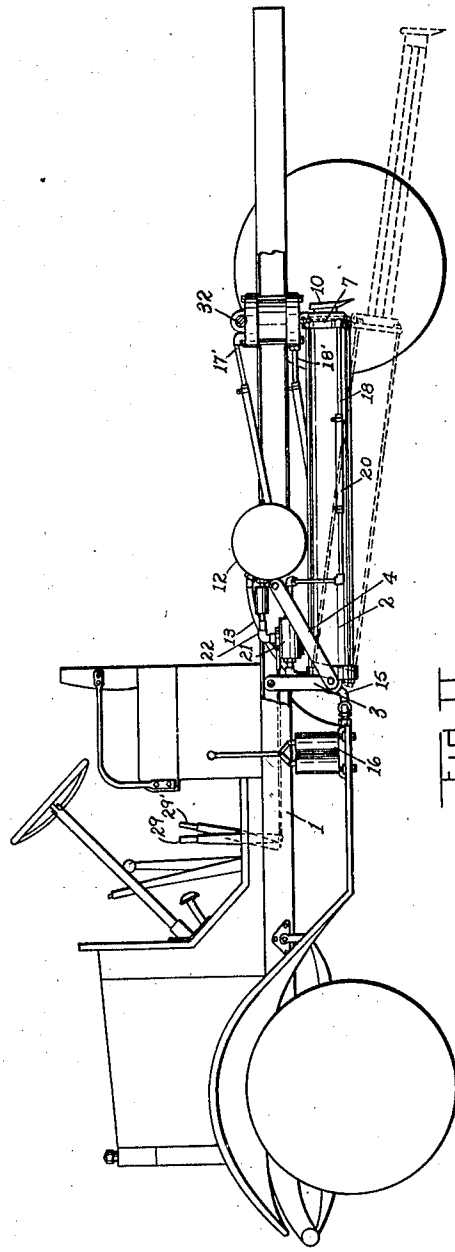
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2 SHEETS—SHEET 2.



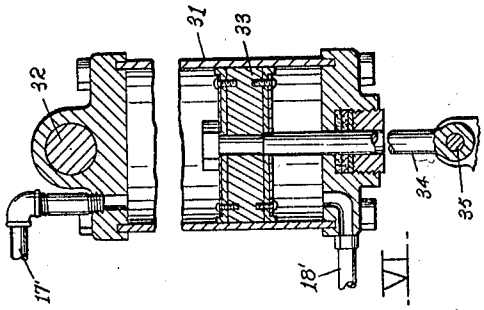


Fig. VI.

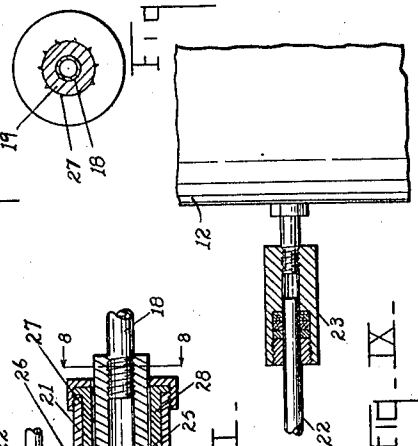


Fig. VIII.

Fig. II.

Fig. IX.

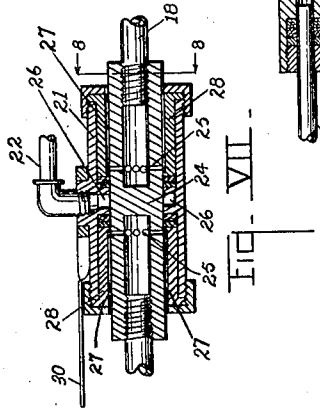


Fig. VII.

Inventor

IRA C. HAVENS

Witnesses

Leslie Gilman

M. Louise Thurston

By Chappell & Earl

Attorneys

UNITED STATES PATENT OFFICE.

IRA C. HAVENS, OF KALAMAZOO, MICHIGAN.

AUXILIARY PROPELLER FOR MOTOR-VEHICLES.

1,298,703. Specification of Letters Patent. Patented Apr. 1, 1919.

Application filed February 11, 1918. Serial No. 216,500.

To all whom it may concern:

Be it known that I, IRA C. HAVENS, a citizen of the United States, residing at the city and county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Auxiliary Propellers for Motor-Vehicles, of which the following is a specification.

This invention relates to improvements in auxiliary propellers for motor vehicles.

The main objects of this invention are:

First, to provide an improved auxiliary propeller for motor vehicles which may be used to supplement the regular driving and traction means of the vehicle and without additional load upon the motor when the propeller is in use.

Second, to provide an improved supplemental driving or propelling means for motor vehicles having these advantages which is comparatively simple and easy of control.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a plan view of a structure embodying the features of my invention, parts being broken away and parts being shown conventionally for convenience in illustration.

Fig. II is a detail side elevation of the structure shown in Fig. I, the auxiliary propeller being shown in actuated position by dotted lines and in inoperative position by full lines.

Fig. III is an enlarged detail partially in longitudinal section through the auxiliary propeller on a line corresponding to line 3—3 of Fig. V.

Fig. IV is a face view of the propeller shoe.

Fig. V is a detail section on a line corresponding to line 5—5 of Fig. III.

Fig. VI is a detail longitudinal section through the control cylinder and piston.

Fig. VII is a detail longitudinal section through one of the control valves on a line corresponding to line 7—7 of Fig. I.

Fig. VIII is a detail section on a line corresponding to line 8—8 of Fig. VII,

Fig. IX is a detail section showing the connection for the valve to the storage tank.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents the chassis of a motor vehicle, and I here use the term as including the running gear frame, wheels, axles, motor and transmission. As the details of these parts form no part of my invention they are not illustrated or described herein.

I pivotally mount a propeller cylinder 2 on the hanger 3 at 3′. The hanger 3 depends from the chassis frame and is provided with a brace 4. Within the cylinder 2 is a piston or plunger 5 to which the propeller or pusher bars 6 are secured, the bars being arranged through the head 7 of the cylinder which is provided with suitable packings. In the structure illustrated these pusher bars are formed of outer tubular members 8 and rods 9, the rods being arranged through the tubular members and constituting tie members. On the rear ends of the bars 6 is a shoe 10, the same being reinforced with a cross member 11 on the rods.

This provision of the double piston rods not only provides a structure which is well adapted to receive and sustain the loads and stresses to which they are subjected and to relieve the piston of undue stresses, but also prevents the turning of the piston and thus allowing the shoe to get out of proper position.

The tank 12 for the storage of air under pressure is connected by the pipe 13 to an engine driven pump 14 and by a branch 15 to the hand pump 16. This provides means for charging the storage tank through the engine under normal running conditions if desired or where that is not practical the pressure may be supplied through the hand pump.

The propeller cylinder 2 is connected by the pipes 17 and 18 to the ends of the control valve member 19, the connection 17 lead-

ing to the front end of the cylinder and the connection 18 to the rear end thereof. These connections have flexible portions, as 20, therein permitting the swinging of the cylinder on its supporting pivot 3′.

The sleeve portion 21 is slidable on the member 19 and is connected by the inlet pipe 22 to the storage tank 12, the connection 22 having a slip coupling 23 therein permitting the reciprocating movement of the valve sleeve 21. The valve member 19 has a central partition 24 with ports 25 at each side thereof. The valve 21 has a port 26 with which the connection 22 communicates so that as the valve is shifted the ports 25 are alternately connected with the storage tank, thus alternately connecting the opposed ends of the cylinder therewith and with the exhaust.

The exhaust passages 27 are formed longitudinally in the packing glands 28 of the valve. When in the central or neutral position the valve is closed and both ends of the cylinder are connected to the exhaust passages,—see Fig. VII. The valve is actuated from the lever 29 positioned so as to be in convenient reach of the operator, the lever being connected to the valve by means of the link 30.

To raise or lower the propeller cylinder to and from its operative position I provide a control or lifting cylinder 31 pivotally mounted at 32 on the chassis and provided with a piston 33, the piston rod 34 of which is pivotally connected to the propeller cylinder at 35. This cylinder is controlled by the valve 19′ which is preferably a duplicate of the valve 19 described, the valve 19′ being controlled from the lever 29′ disposed at the side of the lever 29. The valve is connected to the cylinder 31 through the connections 17′ and 18′ substantially as described for the propeller cylinder connection.

When it is desired to actuate the propeller the lever 29′ is shifted to lower the propeller cylinder by admitting air to the upper end of the cylinder 31 and then actuating the propeller or pusher through the adjusting of the lever 29.

My improved propeller is entirely independent of the regular driving means for the motor so that in the event of emergencies rendering the use of the propeller desirable the motor and regular driving means are not further taxed and in the event of the motor becoming inoperative the auxiliary propeller may be resorted to for temporary propulsion.

I have illustrated and described my improvements in but one embodiment as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

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

1. The combination with the chassis of a motor vehicle, of an air storage tank carried thereby, means for supplying air under pressure to said storage tank, a propeller cylinder pivotally mounted at its front end on said chassis, a propeller provided with a piston reciprocating in said cylinder, a control cylinder mounted on said chassis and provided with a piston and piston rod which is pivotally connected with the rear end of said propeller cylinder, independent connections for the said cylinders to said storage tank, and independent valves adapted to control the alternate inlet and exhaust of air from the ends of said cylinders to actuate the control cylinder piston to raise or lower the propeller cylinder and actuate the propeller piston to extend or retract said propeller.

2. The combination with the chassis of a motor vehicle, of a propeller cylinder pivotally mounted at its front end on said chassis, a propeller provided with a piston reciprocating in said cylinder, a control cylinder mounted on said chassis and provided with a piston and piston rod which is pivotally connected with the rear end of said propeller cylinder, and means for supplying air under pressure to said cylinder.

3. The combination with the chassis of a motor vehicle, of a storage tank carried thereby, means for supplying air under pressure to said storage tank, a propeller cylinder pivotally mounted at its front end on said chassis, a propeller provided with a piston reciprocating in said cylinder, a control cylinder mounted on said chassis provided with a piston connected to said propeller cylinder for raising and lowering the same, connections for the said cylinders to said storage tank, and means for controlling the delivery of air to said cylinders to actuate the control cylinder piston to raise or lower the propeller cylinder and to actuate the propeller piston to extend or retract said propeller.

4. The combination with the chassis of a motor vehicle, a propeller cylinder pivotally mounted at its front end on said chassis, a propeller provided with a piston reciprocating in said cylinder, a control cylinder mounted on said chassis and provided with a piston connected to said propeller cylinder, means for supplying air under pressure to said cylinders, and means for controlling the delivery of air to said cylinders to actuate the control piston to raise or lower the propeller cylinder and to actuate the propeller piston to extend or retract said propeller.

5. The combination with the chassis of a motor vehicle, of a storage tank, means for supplying air under pressure to said stor-

age tank, a propeller cylinder adjustably mounted on said chassis, a propeller provided with a piston reciprocating in said cylinder, means independent of the operation thereof for raising and lowering said cylinder to and from operative position, a connection for said cylinder to said storage tank, and means for controlling the delivery of air to said cylinder.

6. The combination with the chassis of a motor vehicle, of a propeller cylinder adjustably mounted on said chassis, a propeller provided with a piston reciprocating in said cylinder, means independent of the operation thereof for raising and lowering said cylinder to and from operative position, and means for supplying air under pressure to said cylinder.

7. The combination with the chassis of a motor vehicle, of a propeller cylinder mounted thereon, a propeller piston reciprocating in said cylinder provided with a plurality of propeller bars having a shoe rigidly mounted on their outer ends.

8. The combination with the chassis of a motor vehicle, of a propeller cylinder mounted thereon, a propeller piston reciprocating in said cylinder provided with a plurality of propeller bars disposed one above another and rigidly connected at their outer ends and having a shoe mounted on their outer ends.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

IRA C. HAVENS. [L. S.]

Witnesses:
MARTHA J. GREGORY,
LUELLA G. GREENFIELD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."