Oct. 13, 1925. 1,557,197

E. DICKEY

ENGINE

Filed Jan. 24, 1924

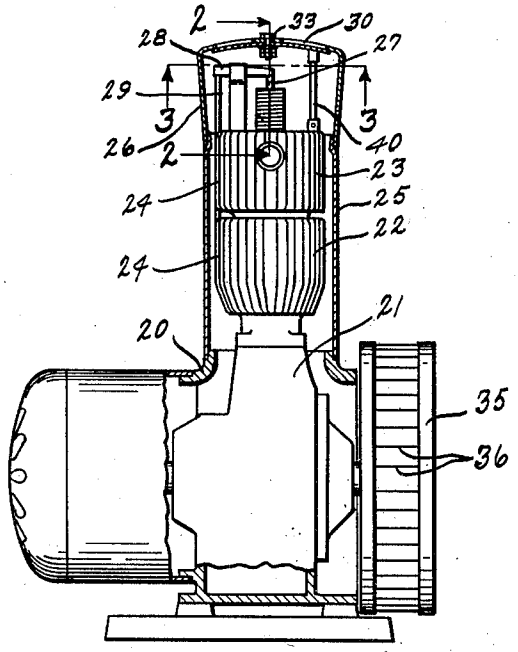


Fig. 1.

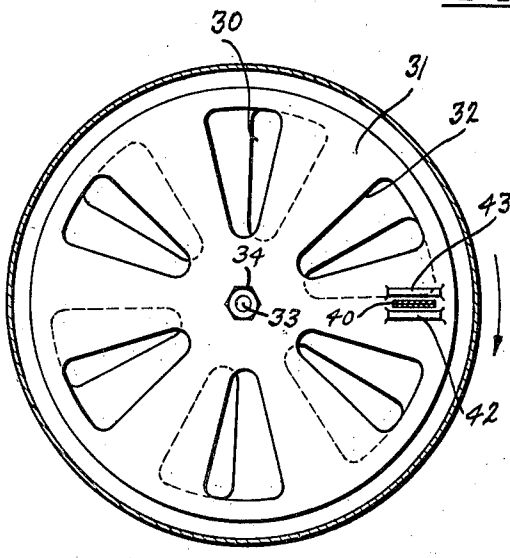


Fig. 3.

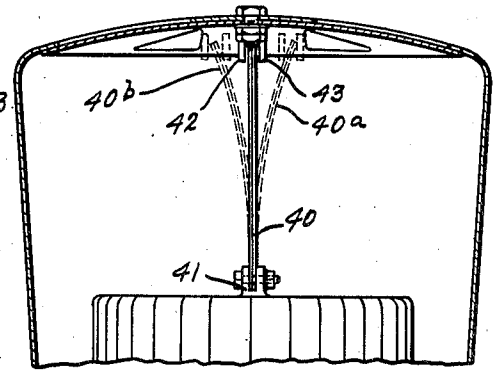


Fig. 2.

Inventor

Ernest Dickey

By Spencer, Sewall and Hardman

His Attorneys

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UNITED STATES PATENT OFFICE.

ERNEST DICKEY, OF DAYTON, OHIO, ASSIGNOR TO DELCO-LIGHT COMPANY, OF DAYTON, OHIO, A CORPORATION OF DELAWARE.

ENGINE.

Application filed January 24, 1924. Serial No. 688,306.

To all whom it may concern:

Be it known that I, ERNEST DICKEY, a citizen of the United States of America, residing at Dayton, county of Montgomery, State of Ohio, have invented certain new and useful Improvements in Engines, of which the following is a full, clear, and exact description.

This invention relates to internal combustion engines, and more particularly to the type of engine having a cylinder cooled by conducting a stream of air past heat dissipating fins radiating from the cylinder.

The object of the present invention is to cool the engine cylinder in accordance with the temperature thereof. One manner of practicing the present invention is to provide a valve controlling the passage of air about the cylinder and to provide a bi-metallic temperature responsive element in thermal relation to the cylinder head for controlling the valve.

Further objects and advantages of the present invention will be apparent from the following description of a form thereof, reference being made to the accompanying drawings.

In the drawings:

Fig. 1 is an elevation, partly in section, showing an internal combustion engine having applied thereto a form of the present invention;

Fig. 2 is a fragmentary view, partly in section, the section being taken on the line 2—2 of Fig. 1, Fig. 2 being on a larger scale than Fig. 1;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1, this view being drawn to the same scale as Fig. 2.

Referring to the drawings, an internal combustion engine 20 includes a crank case 21 supporting a cylinder 22 carrying a cylinder head 23. The cylinder and cylinder head are provided with heat dissipating fins 24 which are surrounded by a jacket or draft tube 25 provided with a removable cap 26 which encloses the valve mechanism of the engine, including a valve 27, a rock arm 28 and a push rod 29.

The top wall of the cap 26 is provided with a plurality of radially disposed ports 30 adapted to be covered by a disk valve 31 having similar radiating ports 32. The valve is pivotally attached to the cap 26 by means of bolt 33 and nut 34.

The engine is provided with a flywheel fan 35 which on being revolved produces a circulation of air downwardly through the space between the draft tube 25 and engine cylinder 22 and cylinder head 23. Heated air is received by the fan adjacent the central portion thereof and is discharged peripherally, the discharge taking place between the plurality of fan blades or vanes 36.

The temperature responsive means for regulating the valve 31 includes a bi-metallic blade 40 attached at 41 to the cylinder head 23. The free end of the blade 40 is received between lugs 42 and 43 extending from the disk valve 31. Normally, or when the engine is at rest and in a relatively cold state, the bi-metallic blade 40 will occupy such a position that the ports 30 and the draft-tube cap 26 are entirely closed, thus hindering the circulation of air about the engine cylinder. The normal position of the blade 40 may be designated by the dotted line 40^a in Fig. 2. After the engine becomes self operative the cylinder head temperature will increase, whereupon the bi-metallic blade will go to the left, as viewed in Fig. 2, to the intermediate full line position, or even to the dotted line position 40^b. This movement of the blade will cause the valve 31 to move in a clockwise direction, as viewed in Fig. 3, to effect the opening of the ports 30 in the draft-tube cap.

The present invention provides for causing the engine to be quickly warmed up so that it will arrive at normal operating speed within a reasonable short time, and thereafter, more or less circulation of air is permitted in order that excessive heating of the engine will be prevented. The draft-tube cap 26 and valve 31 can be removed as a unit from the draft tube 25 without disturbing the blade 40, since upward movement of the cap is not hindered by the blade 40. Removal of the draft-tube cap may be done for rendering the valve mechanism accessible for adjustment.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that

other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. In an internal combustion engine in combination with a cylinder having heat dissipating fins, means for cooling the cylinder including a draft tube surrounding the cylinder, overhead valve mechanism, a removable tube cap supported by the draft tube and enclosing said valve mechanism, said cap being provided with ports in the top wall thereof, a valve carried by said top wall of the cap for closing or opening said ports, and temperature responsive means located above the cylinder and within the draft-tube cap for adjusting said valve.

2. In an internal combustion engine in combination with a cylinder having heat dissipating fins, means for cooling the cylinder including a draft tube surrounding said cylinder, a removable draft-tube cap supported by the cylinder and provided with ports, a valve carried by the cap for opening or closing the ports, a thermostat element attached to the cylinder and having connections with the valve, so constructed that the cap and valve may be removed together from the draft tube while the thermostat remains attached to the engine.

3. In an internal combustion engine in combination with a cylinder having heat dissipating fins, means for cooling the cylinder including a draft tube surrounding said cylinder, a removable draft-tube cap supported by the cylinder and provided with ports, a valve carried by the cap for opening or closing the ports, and a bimetallic thermostat blade having one end attached to the cylinder head, said valve being provided with a recess for receiving the other end of the blade whereby the cap and valve may be removed together from the draft tube while the thermostat remains attached to the engine.

In testimony whereof I hereto affix my signature.

ERNEST DICKEY.