M. C. COSGRAY.

COMBINED ENGINE AND DYNAMO.

APPLICATION FILED JAN. 30, 1919.

1,324,035.

Patented Dec. 9, 1919.

2 SHEETS—SHEET 1.

FIG-2-

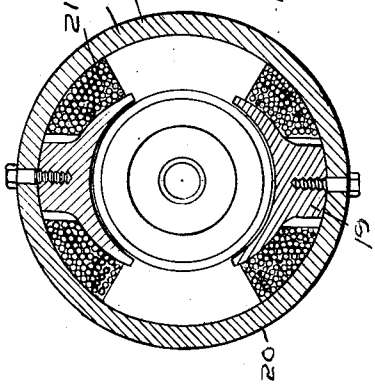


FIG-1-

INVENTOR

Mark C. Cosgray

by

Owen, Owen & Crampton

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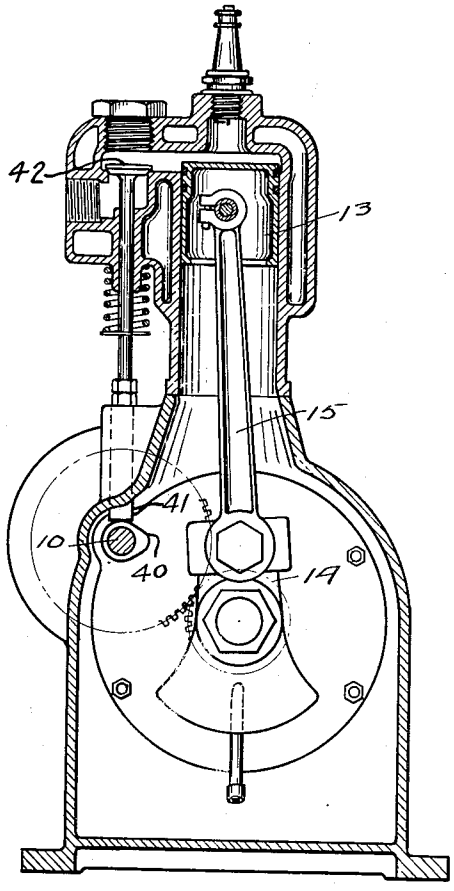


FIG- 3 -

INVENTOR

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UNITED STATES PATENT OFFICE.

MARK C. COSGRAY, OF SANDUSKY, OHIO, ASSIGNOR TO THE MATTHEWS ENGINEERING COMPANY, OF SANDUSKY, OHIO, A CORPORATION OF OHIO.

COMBINED ENGINE AND DYNAMO.

1,324,035. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed January 30, 1919. Serial No. 274,065.

To all whom it may concern:

Be it known that I, MARK C. COSGRAY, a citizen of the United States, and a resident of Sandusky, in the county of Erie and State of Ohio, have invented a certain new and useful Combined Engine and Dynamo; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention particularly relates to a unitary shell forming a supporting member for and containing a shaft that forms a crank shaft of the engine and the armature shaft of the dynamo. It particularly has for its object to provide a combined crank case and dynamo shell, and to provide in connection therewith a simple arrangement of parts whereby they may be easily assembled and yet wherein the assembled parts will operate efficiently to produce the results desired. The invention provides an internal combustion engine driven dynamo which is not only exceedingly efficient but may be manufactured at an exceedingly low cost of production.

The internal combustion engine driven dynamo may partake of different forms and parts thereof may be modified by those skilled in the art without departing from the spirit of the invention which may be embodied in structures of different forms. I have selected for purposes of illustration one of such structures and shall describe the same hereinafter. The structure selected is illustrated in the accompanying drawings.

Figure 1 of the drawings illustrates a broken sectional view of the structure selected, the shell being shown broken so as to illustrate the cam shaft which is used for operating the valves of the engine. Fig. 2 illustrates a transverse sectional view of the dynamo illustrating the manner of mounting the fields and the arrangement of the field coils, and Fig. 3 illustrates a transverse section of the engine.

1 in the figures, is a shell. The shell forms a crank case part 2 and a dynamo shell part 3. The two parts of the shell 1 are separated by means of the wall or plate 4 which is secured by means of bolts 5 to an inwardly extending flange 6 located between the two parts of the shell 1. The plate 4 is provided with a bearing 7 for the crank and armature shaft 8 and a bearing 9 for the cam shaft 10, the plate 4 being provided with bosses in which the bearings 7 and 9 are located. The crank and armature shaft 8 extends through the plate 4 while the cam shaft 10 is socketed or stepped into one of the bosses of the plate 4 and forms a support for one end of the cam shaft 10. The end of the shell 1 is provided with a bearing 11 which supports the other end of the crank and armature shaft. The outer end of the shaft 8 is provided with the usual fly-wheel 12.

The piston 13 is connected to the crank 14 by the piston rod 15. The armature 17 and its windings 18 are connected to the shaft 8. The field poles 19 are attached by bolts 20 to the shell 1 and surround the armature 17 in the manner well known in the art. The field coils 21 surround the poles 19 and produce lines of force that pass through the armature and the shell 1 in the manner well known in the art. A pinion 22 is also connected to the shaft 8 and operates on the gear wheel 23 which is secured to the cam shaft 10.

The open end of the shell 1 is closed by a plate 24 which is secured in position by bolts 25 that are threaded into an inwardly extended flange 26. The opening closed by the plate 24 is large enough to permit the armature, the plate 4 and the parts supported by the plate 4, to pass through, whereby upon removal of the fly-wheel 12 and disconnection with the piston rod the entire movable parts of the shell 1 may be removed and replaced. By this arrangement the movable parts of the shell 1 may be assembled together as a unit and the whole may be easily placed in position in the engine and dynamo by merely running the crank and armature shaft through the shell and into its bearing support 11.

Cams 40 are located in the cam shaft and operate the valve rod 41 and stems to which the valves 42 are connected in the manner well known in the art.

Oil for lubricating the engine and one of the bearings of the crank shaft and armature shaft may be inserted into the part 2 of

the shell. The other end of the crank shaft may be lubricated by oil inserted into the chamber 28. Oil is conveyed to the shaft 8 by means of the splash of the crank and by the ring 36. The plate 4 and shell 1 may be provided with channels 29 in which are located V-shaped ridges 30 formed on the shaft and consequently discharge from the shaft any oil that might work along the shaft either outward toward the fly-wheel or inward toward the armature as it rotates in the sleeves 31. The channels 29 communicate with the crank shaft chamber on the one hand and with the chamber 28 on the other, to return the oil to the chambers. A pipe 32 is connected with the chamber 29 located in the plate 4, and a valve 33 is connected to the end of the pipe which permits the return flow of the oil into the crank chamber, but prevents the return of the oil to the chamber 29. The object of the valve 33 is to prevent a sudden spurt of the oil into the armature chamber, which might otherwise be caused by the rapid downward movement of the piston 13, and from shooting the oil or splashing it onto the armature, and in time shortcircuiting the armature. The valve closes the end of the pipe upon the return of the oil upward through the pipe but permits the oil to pass freely downward through the pipe.

I claim:

In an internal combustion engine driven dynamo, a shell, the shell having an inwardly extending flange located intermediate the engine and the dynamo, a plate removably secured to the flange on the engine side of the flange and for separating the shell into two chambers, one forming the chamber for the crank shaft, and the other for the dynamo, the plate and one end of the shell having bearings, a shaft, one end of the shaft supported by the bearing in the shell and the other end of the shaft supported by the bearing in the plate, the armature of the dynamo connected to one part of the shaft and located in one of the chambers of the shell and between the bearings, an engine crank connected to the shaft and located in the other chamber of the shell, a cam shaft, the plate having a bearing for supporting one end of the cam shaft, a second plate for closing the shell and having a bearing for supporting the other end of the cam shaft.

In testimony whereof, I have hereunto signed my name to this specification.

MARK C. COSGRAY.