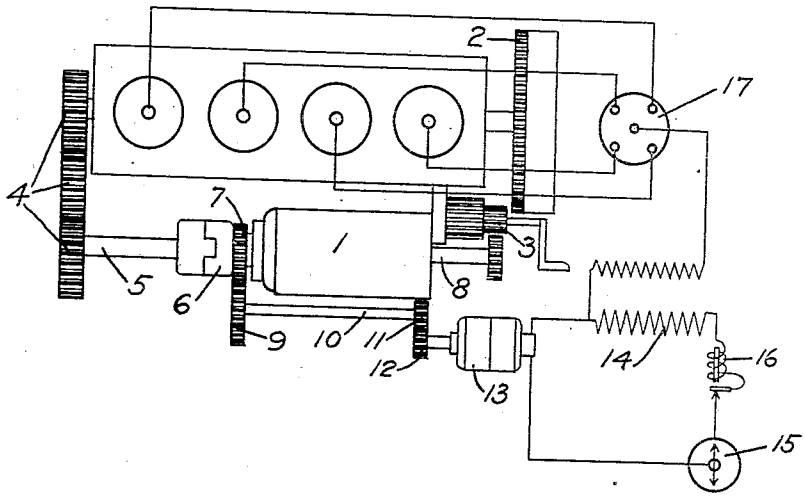
L. LANGNER.

ENGINE STARTING SYSTEM.

APPLICATION FILED MAR. 25, 1914.

1,234,676.

Patented July 24, 1917.



Witnesses
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By

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UNITED STATES PATENT OFFICE.

LAWRENCE LANGNER, OF NEW YORK, N. Y., ASSIGNOR TO THE DAYTON ENGINEERING LABORATORIES COMPANY, A CORPORATION OF OHIO.

ENGINE-STARTING SYSTEM.

1,234,676. Specification of Letters Patent. **Patented July 24, 1917.**

Application filed March 25, 1914. Serial No. 827,207.

To all whom it may concern:

Be it known that I, LAWRENCE LANGNER, a subject of the King of Great Britain, residing at New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Engine-Starting Systems, of which the following is a full, clear, and exact description.

This invention relates to improvements in combined ignition and starting systems of the well-known "Delco" type such as are described in Kettering's U. S. application, Serial Number 721,237, and Patents 1,171,055 and 1,050,523.

In accordance with a preferred form of the invention, the high speed movement of the starting device is utilized to impart similar high speed movement to another device which would otherwise be rotating at engine speed. Thus, a low tension ignition machine which would, in ordinary practice, be connected directly to the engine, is connected to the starting device and driven at high speed thereby during the starting operation.

The figure of the accompanying drawing is a diagrammatic plan showing a separate ignition machine or magneto driven by the starting device.

Referring to the drawing, the starting device 1 is connected with the toothed flywheel 2 by the sliding gears 3. When the engine is running, it drives the starting device at engine speed through the gears 4, shaft 5 and roller clutch 6.

In accordance with this embodiment of my invention, I mount a pinion 7 on the armature shaft 8, and this pinion meshes with a pinion 9 mounted on a workshaft 10, the other end of which carries a pinion 11, meshing with the driving pinion 12 of a low tension magneto 13. When the armature shaft of the starting device rotates at high speed upon starting, it drives the aforesaid magneto at high speed through the gearing connections just described, so that said magneto will be certain to generate the ignition current necessary for starting. The induction coil 14, timer 15, interrupter 16 and distributer 17 are all shown diagrammatically.

While I have described a preferred form of carrying my invention into effect, I wish it to be understood that these are given by way of illustration and not by way of limitation.

What I claim is:—

1. An ignition and starting system comprising the combination with an engine, of a starting device, multiplying gearing between said engine and said starting device, an independent ignition current generating machine, and a separate driving connection between said starting device and said current generating machine.

2. An ignition and starting system comprising in combination with the engine, a dynamo-electric machine operating at high speed for starting said engine and operating at lower speeds during running of said engine, multiplying gearing between said engine and said dynamo-electric machine, a separate independent ignition current generating machine, and a driving connection between said first machine and said ignition machine.

3. An engine starting system comprising in combination with an internal combustion engine, a starting device operating at high speed on starting, multiplying gearing between said engine and said starting device, an independent auxiliary machine, and a driving connection between said starting device and said auxiliary machine whereby said auxiliary machine is driven by the starting device in its high speed movement.

In testimony whereof I affix my signature in the presence of two subscribing witnesses.

LAWRENCE LANGNER.

Witnesses:
J. SMITH,
H. LANGNER.

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