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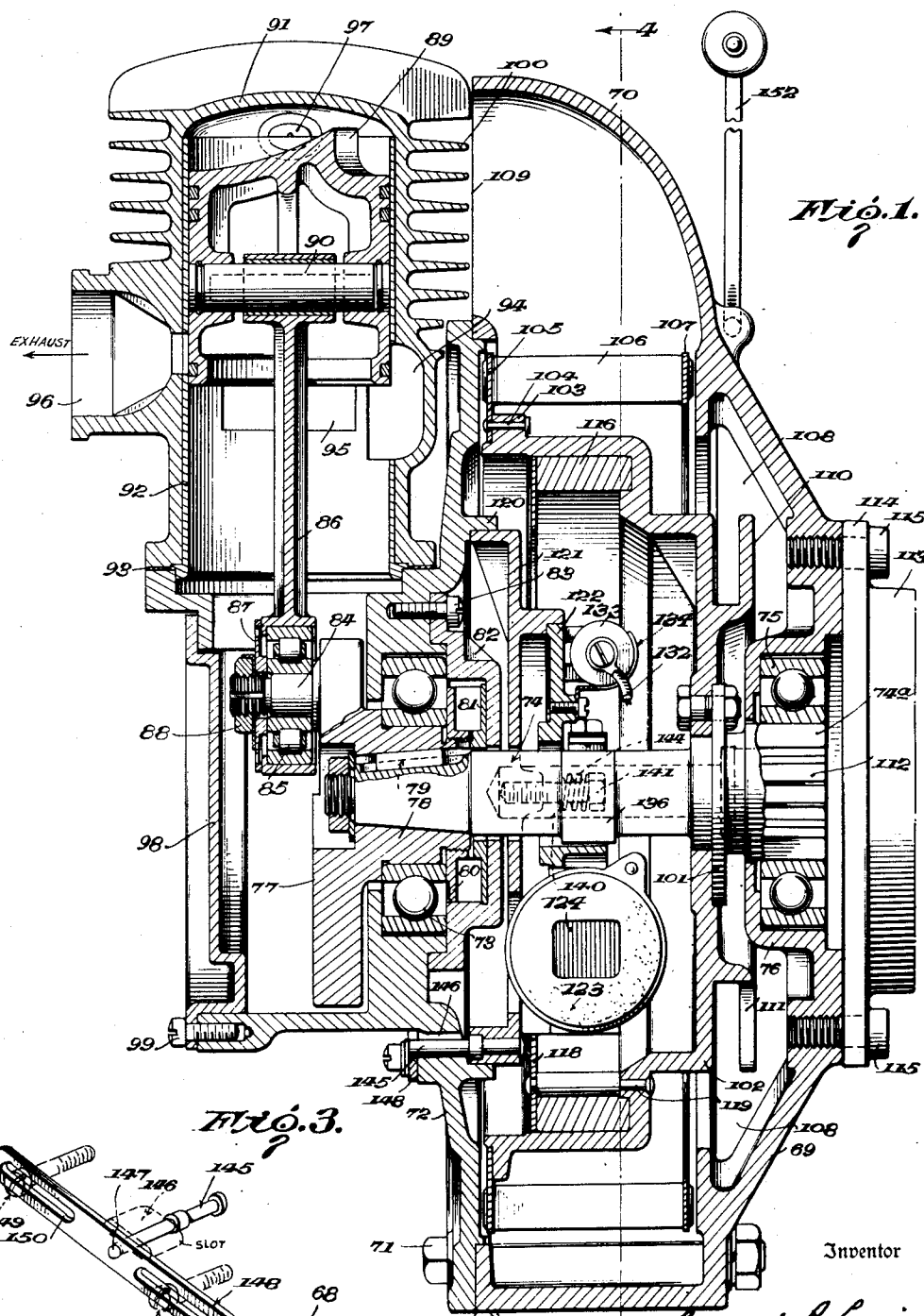
R. P. LANSING

1,939,608

CURRENT GENERATING MEANS

Filed Nov. 1, 1928

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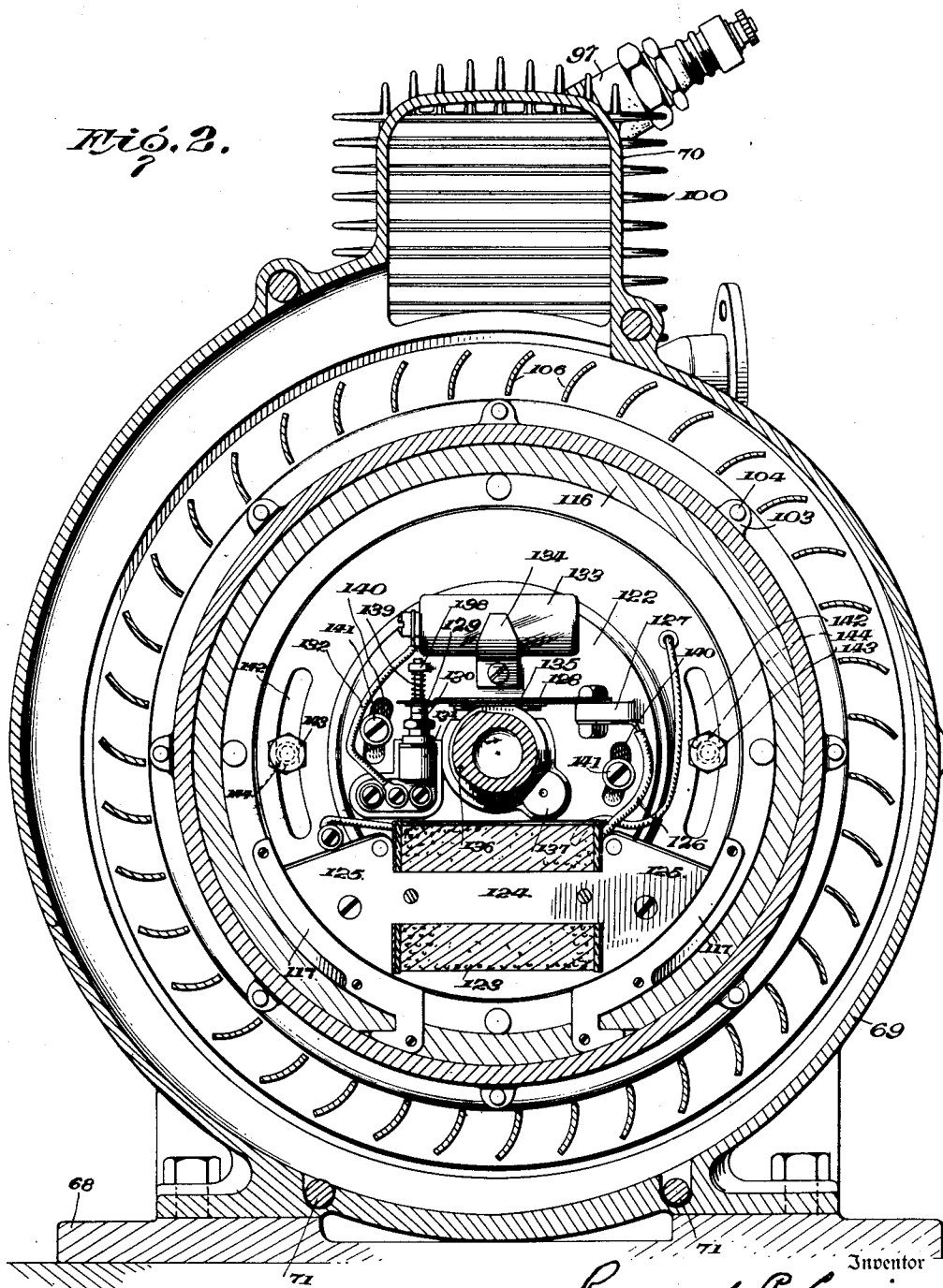
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Fig. 2.



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CURRENT GENERATING MEANS

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1 Claim. (Cl. 123—149)

This invention relates to current generating means, and particularly to current generating means of the "magneto" type.

The object of the invention is to provide improvements in the construction, mounting, operation and adjustment of magneto-electric machines for generating current, the nature of such improvements being indicated in the following specification describing an embodiment of the invention, illustrated in the accompanying drawings, wherein:

Fig. 1 is a longitudinal sectional view of the aforesaid embodiment of the invention;

Fig. 2 is a transverse sectional view taken substantially on line 4—4 of Fig. 1; and

Fig. 3 is a perspective view illustrating a portion of the adjusting means of Figs. 1 and 2.

Referring principally to Figs. 1 and 2, the magneto-electric machine of the present invention is therein illustrated in association with an internal combustion engine which may serve as the operating instrumentality, the engine and magneto being mounted on a common base 68.

The engine crankshaft 74 extends through the magneto housing 69 and drives a wheel 102 which, as shown, is in the form of a cup-shaped casting bolted to a flange 101 on the crankshaft. Mounted within wheel 102 is an annular magnet 116 which is provided on its opposite ends with inwardly extending elongated arcuate poles 117. The magnet is secured to casting 102 for rotation therewith as by means of a ring 118 and rivets 119.

Rotatably mounted in a flange 120 provided in casting 72 is a flange disc 121 which carries a disc 122 on which is mounted in any convenient manner a coil 123 provided with a laminated core 124. The opposite ends of the core are enlarged to provide poles 125 having arcuate faces which are positioned closely adjacent the poles 117 of the permanent magnet. One end of coil 123 is connected through lead 126 with a stationary arm 127 that is mounted on disc 122 and to which is rigidly attached one end of a breaker arm 128. The free end of the breaker arm carries a contact 129 adapted to engage a contact 130 that is adjustably mounted on a post 131 which is secured to but is insulated from disc 122. Contact 130 is electrically connected through lead 132 with a condenser 133 one side of the condenser being grounded. The condenser is secured as by means of a clip 134 to the face of disc 122.

The lower face of arm 128 carries an insulating strip 135 adapted to be engaged by a cam 136

which is preferably formed integrally with the crankshaft 74, said cam being adapted to move contact 129 out of engagement with contact 130. Disc 122 is provided with a cup 137 carrying oil absorbing means, such as felt, adapted to be wiped by cam 136 as the crankshaft rotates, whereby the surface of said cam is maintained clean and lubricated.

In order to prevent excessive movement of the free end of arm 128 the disc 122 carries a laterally projecting lug 138 to which is attached a coil spring 139 that bears at its lower end against the upper surface of arm 128 immediately above contact 130. As the rapidly rotating cam 136 forces the arm upwardly to break contacts 129 and 130, spring 139 coacts with the resiliency of arm 128 to re-engage said contacts.

Disc 122 is preferably mounted for angular adjustment on disc 121 in order to vary the position of arm 128 relative to cam 136. For this purpose disc 122 is provided with a pair of arcuate slots 140 (Fig. 4) through which extends screws 141 having the inner ends thereof threaded into disc 121. The heads of the screws bear against the outer face of disc 122 and permit angular adjustment between the discs.

It is also desirable to provide for manual adjustment of the arm 128 relative to cam 136 whereby the spark may be retarded or advanced during the starting and running of the engine. To this end disc 121 is provided with a plurality of arcuate slots 142 through which extend screws 143, the inner ends of the latter being threaded into casting 72. Coil springs 144 surround screws 143 and bear against the outer face of disc 121 to yieldingly hold the latter in adjusted position.

Means are provided for manually rotating disc 121 relative to casting 72. In the form shown, one end of a pin 145, which is carried by and projects laterally from the lower portion of disc 121, extends through an arcuate slot 146 provided in casting 72, and through a notch 147 provided in the upper edge of a bar 148. Screws 149 which extend through elongated slots 150 in bar 148 slidably support the latter on the outer face of casting 72. One end of the bar is bent outwardly substantially at right angles to provide a handle 151 whereby said bar may be actuated to rotate disc 121 and disc 122 carried thereby. A suitable handle 152 secured in any desired manner to casting 69 at approximately the center of gravity of the apparatus enables one man to readily transport the set.

The central portion of casting 69 has the form of a truncated cone and the upper portion is pro-

vided with an elbow 70 for a purpose to be described hereafter. A pair of bolts 71 extend through the lower portion of casting 69 for securing thereto a somewhat disc-shaped casting 72 which is preferably formed of aluminum and which constitutes a portion of the crank case of the engine. The casting 72 supports centrally thereof a ball bearing 73 for rotatably mounting the inner end of a crankshaft 74. The opposite end of the crankshaft is rotatably supported as by means of a ball bearing 75 that is mounted in a boss 76 formed centrally of the casting 69. A counterweighted crank arm 77 having a hub portion 78 is secured to the tapered end of crankshaft 74 by means of a key 79, the hub of said crank arm fitting within the inner race of ball bearings 73. The outwardly extending end of hub 78 is of reduced diameter and is threaded to receive a retainer 80 for the inner race of bearing 73. A locking disc 81 is provided for retainer 80 and this disc is maintained in operative position by a cap 82 that constitutes a retainer for the outer race of bearing 73 and is secured to casting 72 by means of screws 83. The counterweighted crankarm 77 carries a crank pin 84 having a free end, i. e., an end which is not rotatably supported in the crank case. A roller bearing 85 is mounted on the crank pin 84 for rotatably supporting the lower end of a connecting rod 86. A suitable retainer 87, held in place by a nut 88 and lock washer threaded onto the free end of crank pin 84, is provided for roller bearing 85. A piston 89 is connected by means of the usual wrist pin 90 to the connecting rod 86 to reciprocate in an aluminum cylinder 91 provided with a liner 92 having on its lower end an annular flange 93 which is clamped between the lower end of the cylinder wall and the upper end of the casting 72.

The engine is of the two-cycle three part type and the cylinder is therefore provided with a by-pass 94, an inlet port 95, and an exhaust port 96. A spark plug 97 is provided in the combustion space of the cylinder. A cover plate 98 for the engine crankcase is secured to casting 72 by means of screws 99.

The engine is of the air-cooled type and for this purpose the cylinder is provided with a plurality of horizontally disposed fins 100 and means are provided for continually circulating air around the cylinder. In the form shown the crankshaft is provided adjacent bearing 75 with a flange 101 to which is bolted or otherwise suitably secured a casting 102 which is somewhat cup-shaped in form to constitute a housing for the magneto, as above explained. The periphery of the casting 102 is provided with an annular flange 103 to which is attached by the bolts 104 a ring 105. Projecting laterally from the face of ring 105 are a plurality of fan blades 106, the ends of the blades extending through suitable openings in ring 105 and being upset to secure

the same in place. The opposite ends of the blades are similarly attached to a ring 107 which freely surrounds the casting 102. The central portion of the housing constituted by casting 69 is provided with a plurality of openings 108 through which air is drawn by the fan, the air being forced upwardly and out through an opening 109 provided in elbow 70 and located at one side of the cylinder 91. Air is thus continually forced past the fins 100 of the cylinder whereby the proper temperature of the engine is maintained.

Casting 102 is provided with a flange 110 which is L-shaped in cross section to form a pulley adapted to receive a starting cable or cord (not shown). The periphery of the pulley is preferably provided with a notch 111 to facilitate operative engagement of the cord with the pulley whereby the engine may be manually started.

The engine crankshaft is drivably connected to the armature shaft 112 of a generator 113 having a casing flange 114 through which extend screws 115 for securing the generator to the casting 69. The extending end of the armature shaft is preferably splined and extends into the interiorly splined portion 74a of the crankshaft to form the driving connection and to permit ready detachment of the generator.

To start the engine the operator winds the cable around pulley 110 and retards the spark by adjusting bar 148. Longitudinal sliding movement of the bar is transmitted through pin 145 to disc 121, disc 122 and breaker arm 128 whereby the position of said arm is varied relative to the cam 136. A pull on the starting cord serves to rotate the crankshaft and start the engine. The air fan discharges air through elbow 70 onto the cylinder walls whereby overheating of the engine is prevented. The rotation of permanent magnet 116 coacts with coil 123 and core 124 to generate the desired ignition current. Both the magnet and the fan coact to provide a fly-wheel for the engine and due to the arrangement of these parts the overall length of the transmitting set is greatly reduced.

No claim is made herein to the engine, cooling means, or generator 113; and it is to be understood that the claimed features may be employed with or without any or all of said unclaimed parts.

I claim:

Ignition current generating means including a permanent magnet and a coil operatively associated with the magnet, means for mounting said coil including a disc, means for angularly adjusting said disc relative to its support, a second disc carried by the first named disc, the coil being mounted on said second disc, and means for angularly adjusting said second disc relatively to the first named disc.

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