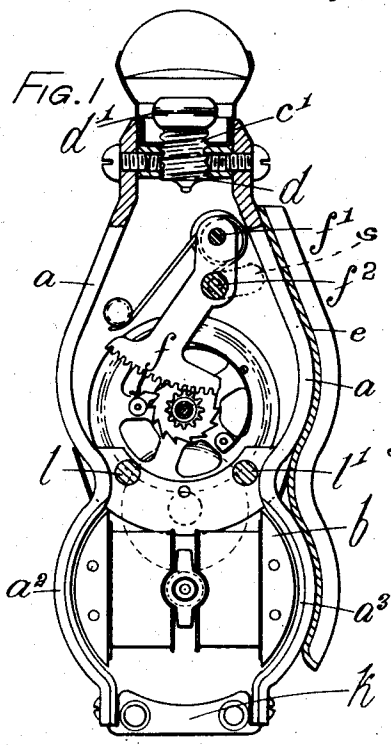
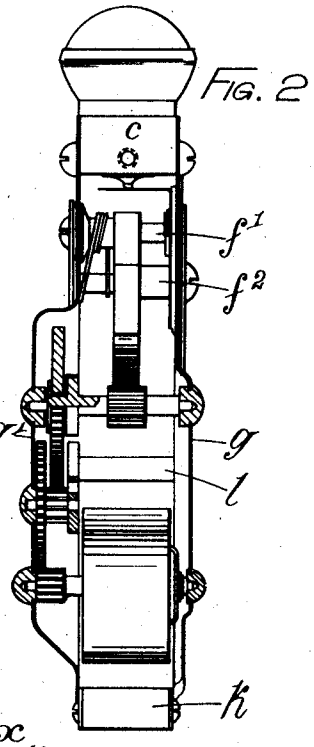
April 8, 1924. 1,489,276

A. H. RAILING ET AL

MAGNETO GENERATOR

Filed July 31, 1920





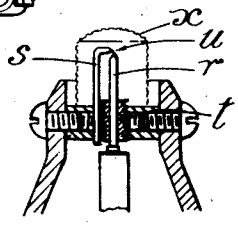
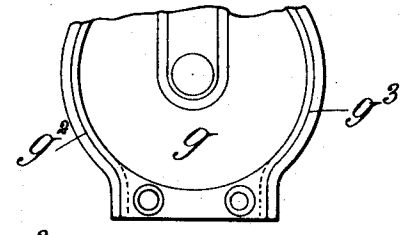
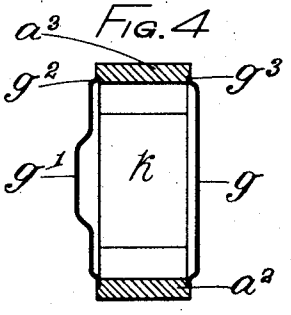
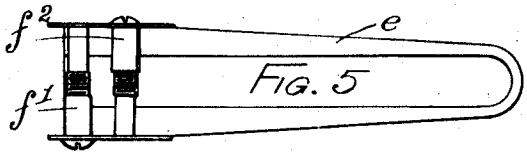


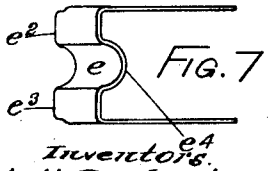
FIG. 8











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by [signature] Atty.

Patented Apr. 8, 1924. 1,489,276

UNITED STATES PATENT OFFICE.

ADOLPH HARRY RAILING AND ARTHUR ERNEST ANGOLD, OF LONDON, ENGLAND.

MAGNETO GENERATOR.

Application filed July 31, 1920. Serial No. 400,430.

To all whom it may concern:

Be it known that we, ADOLPH HARRY RAILING and ARTHUR ERNEST ANGOLD, citizens of the United Kingdom of Great Britain and Ireland, and both residents of 67 Queen Victoria Street, London, E. C. 4, England, have invented certain new and useful Improvements in Magneto Generators, of which the following is a specification, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in hand operated magneto generators suitable for hand lamps, gas lighting and analogous purposes and refers to that type of apparatus in which a hand operated magneto-generator is employed to furnish current to the lamp, sparking gear or other device.

The chief object of the invention is to facilitate manufacture, and by the special construction and arrangement of the parts of the apparatus, and at the same time to keep the overall dimensions at a minimum.

The chief feature of the invention is the arrangement of the permanent magnet system and with this a novel method of connecting the operating handle, and, in the case of electric lamps includes an improved method of mounting of the lamp by all of which a most efficient apparatus of small dimensions is obtained.

In carrying out our invention the machine is kept as thin as possible so as to be convenient for carrying in the pocket, and to reduce the overall length a special arrangement of the magnetic circuit enables the lamp cap and bulb to be sunk into the body of the machine.

Methods of carrying out our invention and details of parts are shown in the accompanying drawings in which—

Fig. 1 is a view of the apparatus as applied to a lamp, with one side removed and a small part in section. This drawing shows the operating handle in closed position.

Fig. 2 shows a similar lamp but on substantially a vertical section to that shown in Fig. 1.

Fig. 3 is a broken elevation of one of the metal side plates.

Fig. 4 is a transverse section showing the edges of the side plates seated in the recesses of the magnets.

Fig. 5 is an elevation of the operating handle.

Fig. 6 is a transverse section thereof.

Fig. 7 is a perspective view of the free end of the handle showing the same constructed of sheet metal.

Fig. 8 shows how the invention could be fitted with a spark gap and used for gas lighting purposes.

In Figs. 1 to 7 the magnetic circuit consists of two flat strips of metal a, a' bent to form the poles a^2, a^3 of the magnet between which rotates an ordinary H armature b. The strips are magnetically joined by a yoke c of soft iron of sufficient cross section to permit of it being bored out at c' and threaded to receive the lamp cap d, the bulb d' of the lamp being also sunk in a recess in the yoke.

The operating handle e works in connection with a toothed quadrant f to drive a series of wheels geared to the armature, one of which is fitted with pawl and ratchet to enable the armature to continue running between the strokes of the handle, the whole of the mechanism being suitably carried by two metal plates g, g' which are connected together at one end by the aforesaid iron yoke c and the other, viz: the armature end, by a non-magnetic block k and cross pillars l, l' at suitable positions between the two blocks, all in substantially ordinary clockwork manner. Thus the gearing, including the armature, is mounted between the two plates g, g'. The plates are shaped at one end so that their edges g^2, g^3 (Figs. 3 and 4) are concentric with the armature, and the two permanent magnets are clamped on after the wheels and armature have been erected between plates. This enables all the fitting work and mechanical testing to be done before it is closed in by the addition of the magnets. At the same time the shaping of the plates concentric with the armature ensures that when the magnets are clamped on they are held in the correct position in relation to the armature so as to maintain the correct air gaps between the armature and the permanent magnets.

It will be seen in Fig. 4 that the edges of the magnets are recessed to receive the edges g^2 and g^3 of metal plates g, g'.

The special detail in the connection of the operating handle or lever e to the toothed quadrant f is that the latter is provided

with two spindles f', f^2 one of which, f', acts as a pivot for the quadrant and the handle, and the other, f^2, acts as a driver working freely in slots s cut in plates g, g'. The two spindles f', f^2 (Fig. 5) are in the form of shouldered screws and the handle is of U shaped cross section as shown in Fig. 7 with the two spindles passing through and fitting closely in both arms of the U. This arrangement is simple to erect and as the spindles are put a fair distance apart, say from $\frac{3}{8}''$ to $\frac{1}{2}''$ power is easily transmitted to the toothed quadrant.

The operating handle e preferably made out of sheet metal is bent in U shape form to embrace the machine from back to front and is also extended down the side of the machine so that the fingers can operate it easily.

For the purpose of preventing the operating handle nipping any part of the hand as it approaches the outside of the machine, the part on which the fingers press is shaped so that the outer edges stand further away from the machine than the centre. This means that the centre of the lever touches the outside of the magnet first whilst the outer edges are still, say $\frac{1}{4}''$ away from the magnet. This cross section of the lever extension also gives considerable strength and enables us to make it out of relatively thin and light material.

In Fig. 8 the top of the apparatus is shown and has fitted to it a sparking device in place of the lamp. This device comprises the terminals or points r and s insulated by the block t and with a spark gap u. A perforated guard may be provided as shown by dotted lines. The points could be in a tube or other fitting attached to the apparatus or otherwise conveniently arranged.

What we claim and desire to secure by Letters Patent is:

A hand operated magneto generator, comprising a casing having end walls of plates forming a magnetic circuit, each of said plates being shaped at one end to form magnetic poles, an armature mounted for rotation between such poles, a yoke of soft iron connecting said end walls remote from the armature, said yoke being formed to support the means to be influenced by the current generated, an operating means mounted between said walls above the armature, side walls having their edges seated in recesses in the end walls, means for securing the end walls together to thereby fix the side walls in place, and driving mechanism between the operating means and armature.

In witness whereof we have hereunto set our hands in presence of two witnesses.

ADOLPH HARRY RAILING.
ARTHUR ERNEST ANGOLD.

Witnesses:
JOHN STANLEY,
ARTHUR EATON.