Jan. 20, 1942. F. J. BADALEWSKI 2,270,492

TIMING LIGHT

Filed Nov. 8, 1938

Fig. 1.

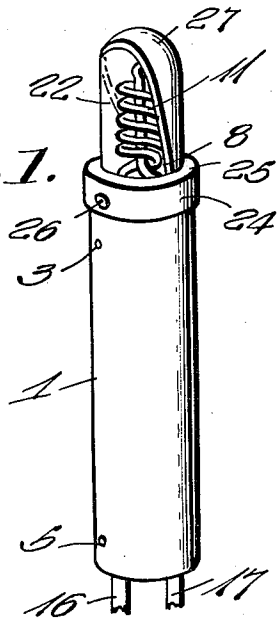


Fig. 2.

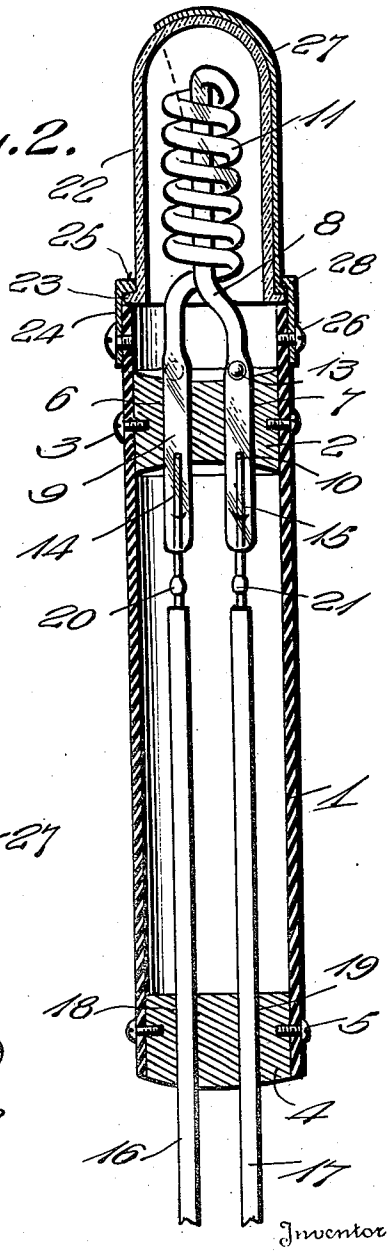


Fig. 3.

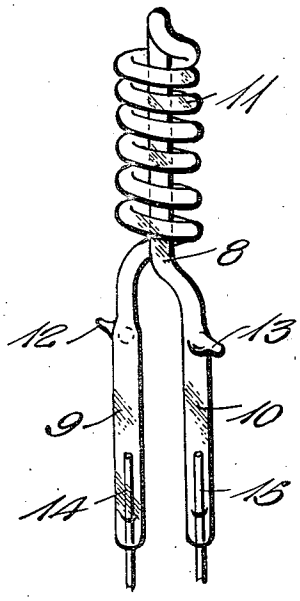
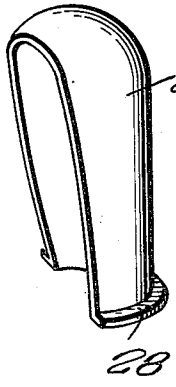


Fig. 4.



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2,270,492

UNITED STATES PATENT OFFICE

2,270,492

TIMING LIGHT

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Application November 8, 1938, Serial No. 239,593

2 Claims. (Cl. 240—11.4)

My invention relates to improvements in timing lights, and particularly to a device of the character intended and adapted for use in connection with the ignition system of internal combustion engines to diagnose and aid in correction of motor troubles.

A primary object of this invention is to provide a timing light to be used as an ignition stroboscope, to indicate irregularities in or improper operation of an internal combustion engine, through functioning of the ignition system, and to permit timing or resetting or other correction or remedial adjustment of the parts.

Another object is to so construct the illuminating portions that a clear and brilliant illumination is provided, and the light rays are concentrated and directed to a part desired to be observed in conjunction with or to be synchronized with the flashing of the light, and at the same time the light rays are shielded or kept from the eyes of the operator or observer to thus permit a clear and sharp view of parts desired to be timed or synchronized.

A further object is to provide protecting and shield structure for the usually frangible light tube, to thus guard against damage to or breaking of the parts while the instrument is being handled or is in use, or where it is likely to be struck or jarred or subjected to any other damaging forces.

Still another purpose of this invention is to provide a timing light of simple and inexpensive construction, which is yet sturdy enough to withstand and resist ordinary shocks and conditions of use and is of such size and design that it can be readily handled and manipulated in limited space and under conditions ordinarily encountered in use, and which will at the same time give sharp and instant and brilliant illumination to indicate the condition and operation of an ignition system and to permit adjustment and synchronization of ignition, action of governor, and other parts and portions of an engine ignition system.

With the above and other objects and purposes in view, some of which will be apparent to those skilled in the art, and others of which are inherent in the construction and use of the parts, my invention includes certain novel features of construction and combinations and arrangements of parts which will be hereinafter set forth in connection with the drawing and then pointed out in the claims.

In the drawing:

Figure 1 is a view in perspective showing a timing light constructed in accordance with my invention.

Fig. 2 is an enlarged longitudinal central sectional view through the instrument.

Fig. 3 is a perspective view showing the lighting tube or element.

Fig. 4 is a perspective view of a light confining and reflecting hood.

The body or housing 1 is preferably conveniently made up as a cylindrical tube of hard fiber, or other suitable material, and is of a diameter and length to conveniently serve the dual function of a housing and a handle. A socket plug 2, which may be of any suitable insulating material, is inserted in one end of the body or housing 1 and is held in place therein by suitable fastenings 3, and a closure plug 4 is inserted in the outer end of the body or housing 1, and is held in place by fastenings 5. The socket plug 2 has openings 6 and 7 formed therethrough substantially parallel with the axial line of the housing 1, and spaced apart.

A light tube 8, being a neon tube or other gas filled tube capable of being energized by the passage of high frequency current, has the ends thereof extending in substantially parallel spaced relation, as at 9 and 10, to fit within the openings 6 and 7 of the socket plug 2. The arm terminating in the end 10 is offset to extend substantially centrally or in axial alignment with the socket plug 2; and, the middle portion of the tube is carried in a helical or spiral coil, as at 11, around this extending portion and then is carried outwardly to merge into the end 9.

The socket plug 2 is preferably spaced slightly inwardly from the end of the housing 1, and the tube 8 is thus held with the coiled portion 11 extending from the end of housing 5 and exposed beyond this end. Vacuum exhaust and gas supply nipples can be provided on one or both of the ends 9 and 10, and when the tube has been exhausted and the gaseous medium inserted and these nipples have been sealed off, laterally extending tips will result, as indicated at 12 and 13, which tips can be located to serve as stops engaging the outer side of the socket plug 2 to thus position and retain the light tube with the coiled portion 11 thereof extending.

As has been stated, the tube 8 will be exhausted and will then be charged with neon gas, or with other suitable conducting gaseous medium, so that as current or circuit connections are made with the electrodes 14 and 15 within the ends of the tube, the tube will glow or light, upon the passage of suitable electric current therethrough,

Lead wires 16 and 17 passing through, and preferably suitably held within openings 18 and 19 in the plug 4, have their inner ends connected at 20 and 21 with the electrodes 14 and 15.

A cover globe 22, shaped somewhat after the manner of a small bell jar, of glass or other suitable transparent or translucent material is provided to fit over the coiled portion 11 of the light tube 8, with its open end bearing upon the end of the housing tube 1, and this cover globe is preferably provided with an outwardly extending bead 23 around the open end. A ferrule 24 is provided to fit over the end of the housing sleeve 1 against which the open end of the cover globe is disposed and this ferrule sleeve has an inturned flange 25 engaging the bead 23, substantially after the manner of a bezel ring, to hold the cover globe in proper position and in place. In the present instance I have shown screws of fastenings 26 to hold the ferrule sleeve 24 in place, but it will be appreciated that any suitable form of fastening or securement can be employed in this connection.

In the use of my improved timing light, as an ignition stroboscope, one lead can be connected with a spark plug or other part embraced in the high tension system of an automobile or other motor, and the other lead can be grounded; and, as current is supplied the coiled portion 11 of the tube 8 will be caused to glow with considerable intensity of light to penetrate or show through the cover globe 22. As it is desired to confine and concentrate this light upon a relatively small area or part, as for example a marking on an engine fly wheel or a balancer on a fan pulley, or the like, I provide a reflector hood 27 to confine and concentrate and reflect the light rays through one side of the cover globe 22. This reflector hood 27 can be made of sheet metal or of any other suitable material, and preferably extends peripherally around one side or a desired part of the cover globe, and over the end thereof. The area to be covered by this reflecting hood 27, both peripherally and over the end, may be varied to suit the particular conditions of use, and under some circumstances it may be found desirable to make the cover hood with a relatively narrow slit or opening along one side, to thus concentrate a light line. The reflecting hood 27 has a flange 28 on the inner end thereof caught by the bezel-like flange 25 of the ferrule ring 24, to thus hold the reflecting hood 27 in the desired position. Obviously, the reflecting hood 27 can be made of any desired shape or size, and of any suitable material, and the inside of this hood can be painted or plated or polished or otherwise treated to provide a reflecting surface.

In the use of my improved timing light, the leads 16 and 17 can be connected, as has been set forth above, with suitable parts of an ignition and ground structure, and flashing of the light tube 8 will occur at the instant and during the interval the current is supplied, thus giving a clear and brilliant and sharp indication of the passage of current and consequently of the operation of an engine ignition system, or other part with which stroboscopic observation is being made. The light tube being exposed in considerable length will increase the intensity and brilliancy of the light to thus make readily visible any indicating point or line on a fly wheel or any other point or indication mark desired to be observed, the cover globe 22 will protect this tube against breakage or other damage, and the reflector will afford protection for the cover globe and will also concentrate and intensify the light rays to throw these upon a desired area while at the same time guarding against emanation of light rays to confuse or blind the operator or user.

While I have herein shown and described only certain specific embodiments of my invention and have suggested only certain possible modifications, it will be appreciated that many changes may be made in the form, construction, arrangement and association of the parts, and also in the manner of use, without departing from the spirit and scope of my invention.

I claim:

1. A timing light comprising, a tubular handle, a lamp tube having its ends extending in substantially parallel spaced relation and having its intermediate light emitting portion formed in a helical or spiral coil, electrodes at the ends of the tube, lateral extensions on the end portions inwardly from the extreme ends thereof, a socket plug mounted in the end of said handle portion provided with substantially parallel extending spaced openings receiving and holding the ends of the light tube and with the lateral extensions bearing against the plug to thus retain the coiled light emitting portion extending beyond the end of the handle tube, a plug in the opposite end of the handle portion provided with spaced openings, wires connected with the electrodes of the light tube passing through and held in the openings of said plug, a transparent cover globe mounted over the coiled light emitting portion of the light tube and having a beaded formation adjacent to the end of the handle tube, a flanged ferrule sleeve mounted on said handle tube engaging the beaded portion of the cover globe to retain the same in place, and a reflecting hood disposed on and over a part of the periphery and the end of the cover globe and also held in place by said flanged ferrule ring.

2. A timing light for use in synchronizing parts of a high tension ignition system comprising, an elongated tubular body of insulating material, a plug having a pair of spaced openings therein fitted and held within said tubular body adjacent to each end thereof, a bent lamp tube having its intermediate light-emitting portion formed in a spiral coil and having its ends extending in substantially parallel spaced relation for insertion in the spaced openings of the plug adjacent to one end of the tubular body and having lateral extensions on the end portions inwardly from the ends thereof as received through the openings of the plug for holding the light-emitting portion in position extending beyond the end of the body, terminals at the ends of the lamp tube, flexible cables connected with said terminals and passed through the openings of the second plug and consequently extending from the body at the end opposite to the extension of the lamp tube, a transparent cover globe mounted over the extending coiled light-emitting portion of the light tube and having a beaded formation engaging on the adjacent end of the body portion, a reflecting hood disposed on and over a part of the periphery and the end of the cover globe and provided with an extending flange engaging with the flange of the cover globe, and a flanged ferrule sleeve mounted on the end of the body over and around the flanges of the cover globe and the reflecting hood and holding said parts in position upon said body.

FRANK J. BADALEWSKI.