

MARK

DYNAMO E3
SWITCHBOX CS6

LUCAS LIGHT CAR ELECTRIC LIGHTING SYSTEM

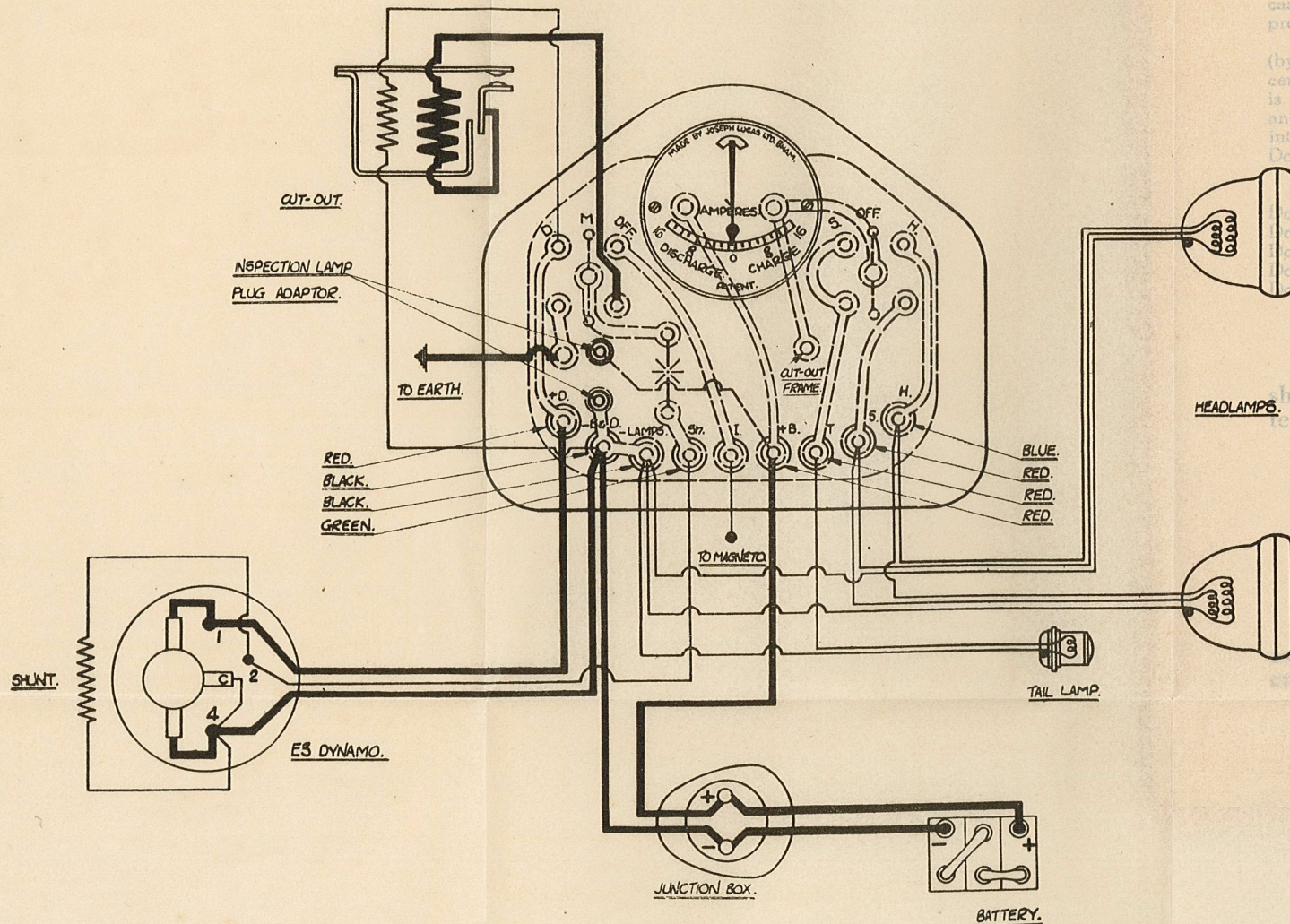
WIRING DIAGRAM. 6 VOLT.

3 LAMP SET

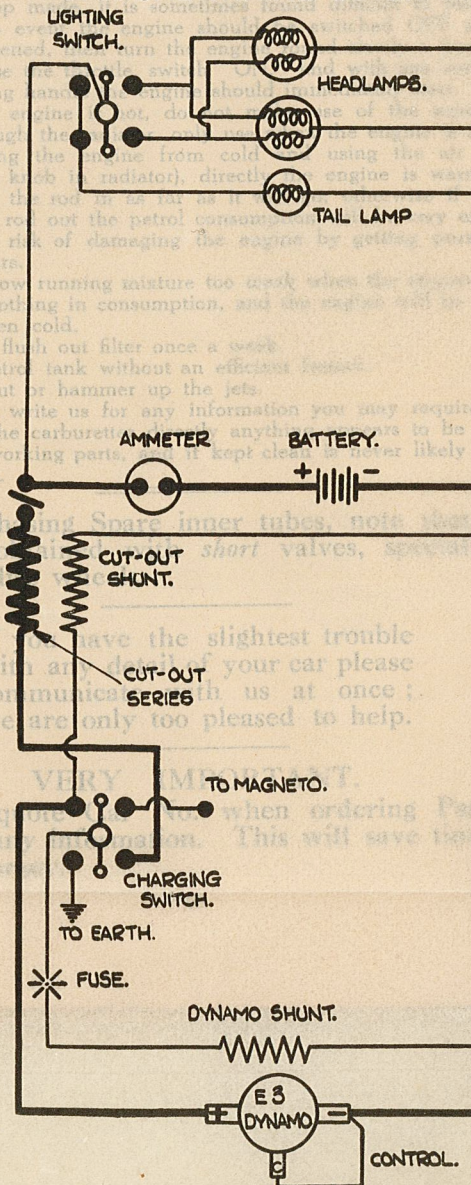
SHOWING INTERNAL CONNECTIONS OF SWITCHBOX

DR'G No. 1390-A

DESCRIPTIVE WIRING DIAGRAM



TECHNICAL WIRING DIAGRAM



MARK

DYNAMO E35
STARTER 6 VOLT.

LUCAS LIGHT CAR STARTING AND LIGHTING SYSTEM

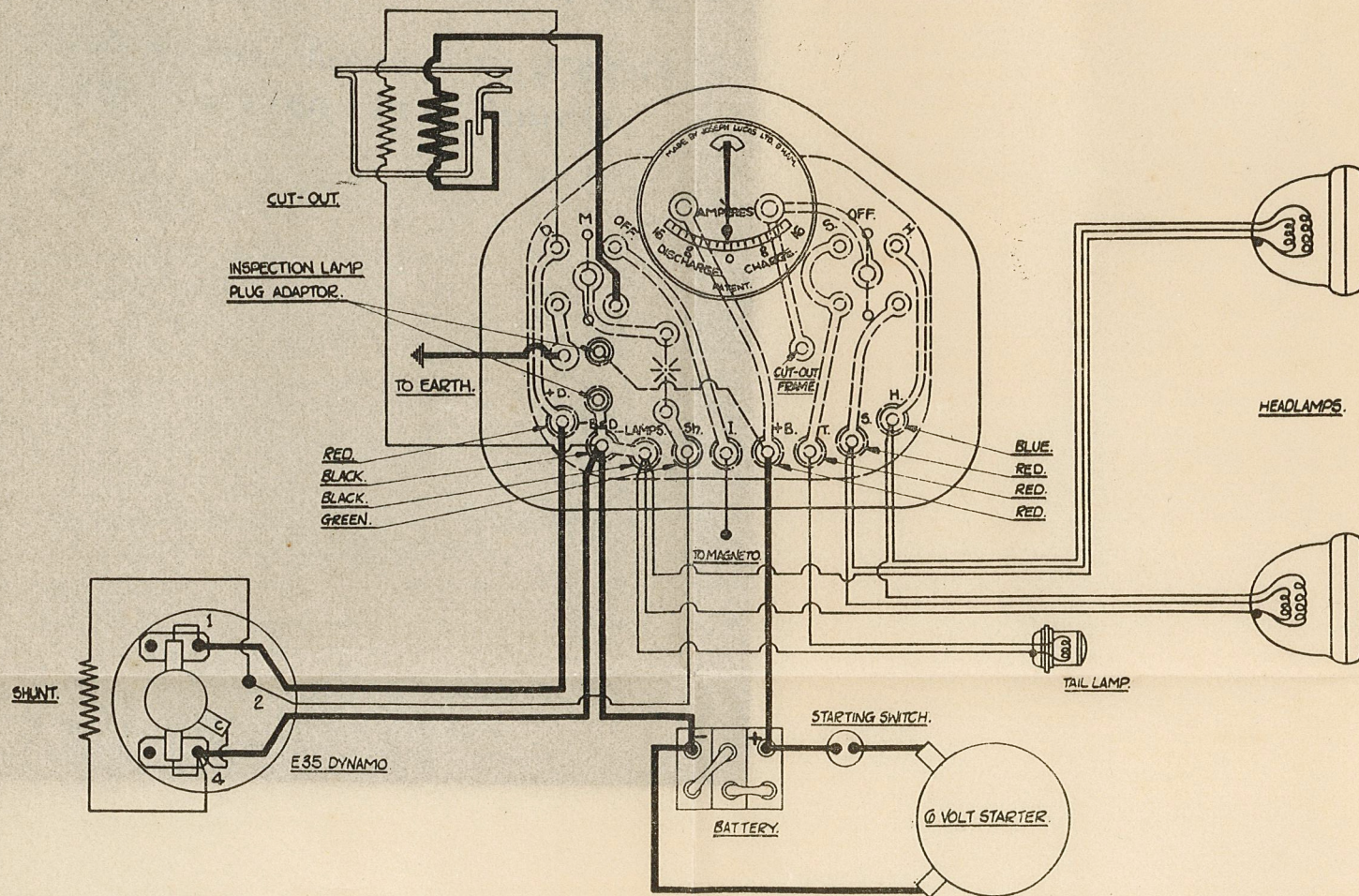
(TWO UNIT) WIRING DIAGRAM. 6 VOLT.

3 LAMP SET

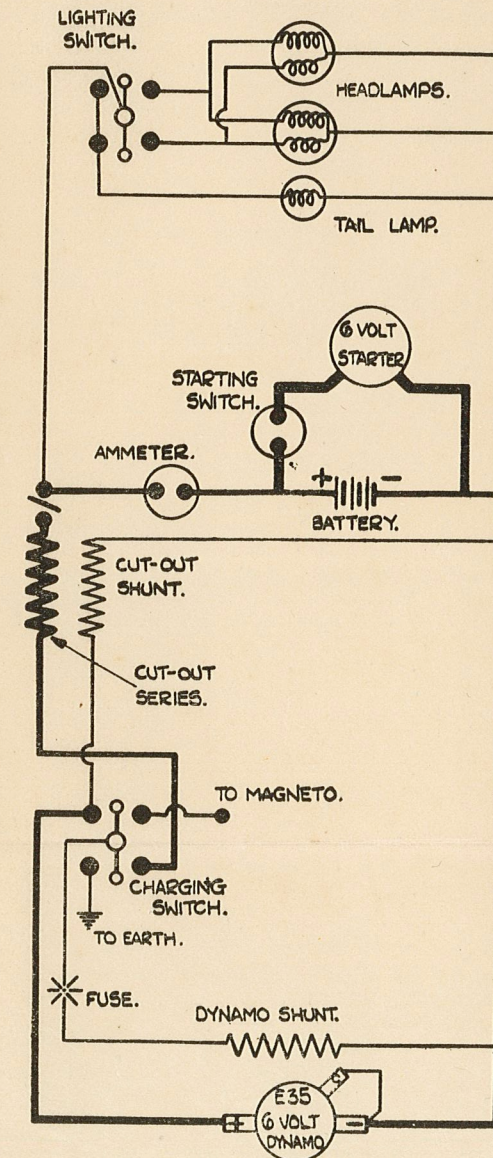
SHOWING INTERNAL CONNECTIONS IN SWITCHBOX

DR'G No. 1390-BA

DESCRIPTIVE WIRING DIAGRAM



TECHNICAL WIRING DIAGRAM



The 8 h.p. Rover Lighting Set

The armature of the Lucas dynamo is mounted eccentrically, so that the belt driving the dynamo may easily be adjusted by loosening the strap flynut and turning the dynamo round in its cradle. This must not be adjusted too tightly or belt will break.

The output is 6 volts 4.5 amps., and is maintained constant at high speed. Cars fitted with self-starter have a dynamo giving 8 amps. maximum output.

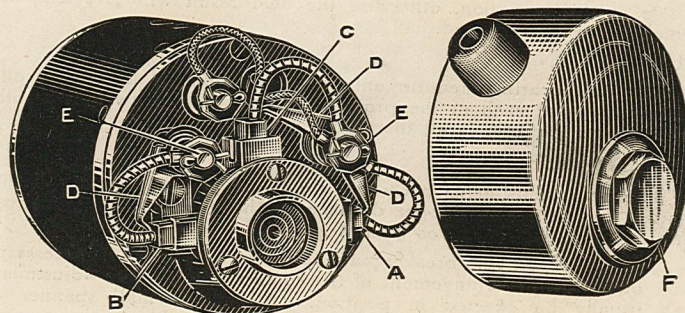


Fig. 1. View of Dynamo with cover removed.

A, B, C—brushes.
D—springs holding brushes in position.
E—spring terminals

The brushes should be free to slide in their holders, and care should be taken that the flexible cable from brushes is well insulated from the body of the machine.

The brush gear and commutator should be inspected occasionally. These are readily accessible by unscrewing the hexagon nut which keeps the end cover in place. All the brushes (A, B, C, Fig. 1) should bed over the whole surface in contact with the commutator, and when in good condition this surface appears polished.

Worn brushes may be withdrawn by removing the split pin at the end of the spring terminal, when the eyelet on the flexible brush lead can be detached. The brush tension spring should then be held out of the way and the brush withdrawn from its holder.

It sometimes, though rarely, happens that the grooves between the commutator segments become clogged with brush dust, and tend to short circuit across to one another. This is easily rectified by carefully scraping out these grooves with a pin or other suitable instrument.

The wiring of this equipment should be carefully studied, because there are slight departures from usual practice for the sake of simplicity (see separate diagram at end of book).

The negative terminal of the dynamo is earthed on to the body of the machine, but the frame of the car is not relied upon to conduct the current.

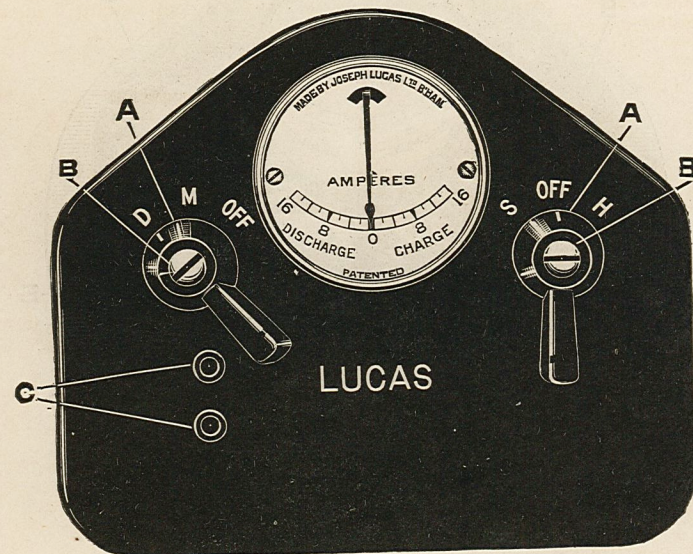


Fig. 2. Exterior of Switchbox.

A—switch levers.
B—securing screws.
C—inspection lamp plug adapter.

A three-core cable is taken from the dynamo to the switchbox, and the black core is fitted to the negative terminal of the dynamo and serves as a conductor between the dynamo and switchbox.

All connections should be kept tight, and if there is any irregularity in the behaviour of the lighting system this is the first and most important point to confirm.

The lamps are provided with double filament bulbs, the caps of the bulbs forming the return conductor to the body of the lamp plug, and a three-core cable is taken from the switchbox to each lamp.

It should be noted when changing bulbs that the switch marked "S" should light the small filament, and the switch marked "H" the large filament. Should this effect be reversed in either or both bulbs, the latter should be fitted into their bayonet holders the other way round.

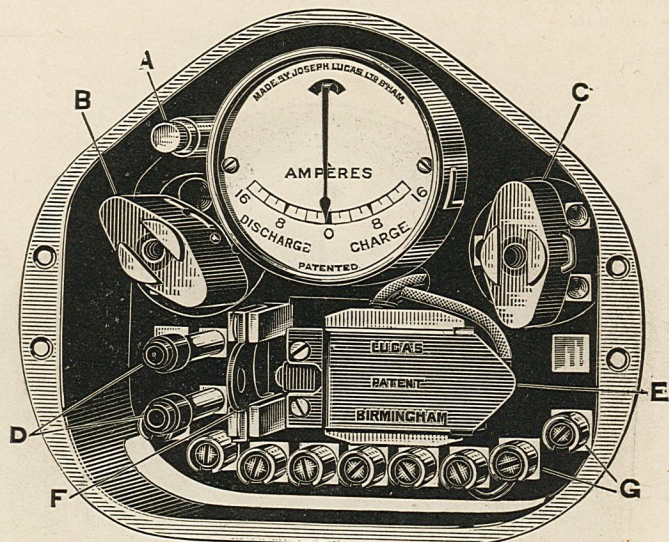


Fig. 3. Switchbox with cover removed.

- A—spare fuse carton.
- B—dynamo and magnet switch.
- C—switch for lamps.
- D—inspection lamp plug adapter.
- E—electro-magnetic cut-out.
- F—fuse holder.
- G—terminals.

The tail lamp cable is a twin core and the bulb is a single pole bulb, the return current being by the cap of the bulb to the body of the plug and from a sleeve connected direct to the latter to the return core.

THE SWITCHBOX.

The left-hand switch has three positions: (1) "Off," (2) "M" position, magneto switched on and dynamo off, and (3) "D," dynamo and magneto on. The right-hand switch controls the lamps: "H," head lamps and tail lamp; "S," side lamps dim and tail lamp.

Ammeter.—The centre zero instrument indicates the actual current flowing into the battery; thus, if the head lamps are on, and are

consuming 6 amps., and the dynamo is generating 8 amps., the ammeter shows 2 amps. charge.

The cover of the switchbox is held in position under spring tension by the switch levers, which in turn are held by the securing screws B (Fig. 2). Fig. 3 shows the switchbox with cover removed. Wiring instructions are printed on the inside of the cover plate of the switchbox (Fig. 4).

A complete wiring chart of the entire system will be found at the end of this booklet.

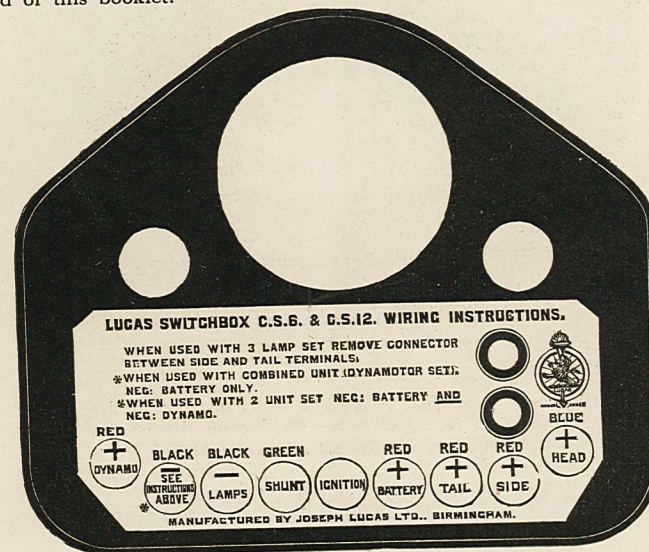


Fig. 4. Inside view of Front Cover Plate, showing Wiring Instructions.

THE ELECTRO-MAGNETIC CUT-OUT.

contained in the switchbox, automatically connects the dynamo to the battery for charging when the former commences to generate. It also disconnects the dynamo from the battery when charging stops, thus preventing the battery discharging into the dynamo.

This automatic switch is correctly set and adjusted before it leaves the factory, and should not be tampered with in any way. Should it fail to operate the cause should be looked for elsewhere rather than in the cut-out itself, as wrong or crossed connections are liable to account for such failure. The cut-out does not prevent over-charging.

THE BATTERY

is the one unit of an electric lighting system which *must* have regular attention. It is the "reservoir" of the system, which is being frequently "tapped" by the lamps, and should, therefore, be constantly

replenished from the dynamo by having the latter on "charge" during daytime running, and must always be on charge while lamps are alight.

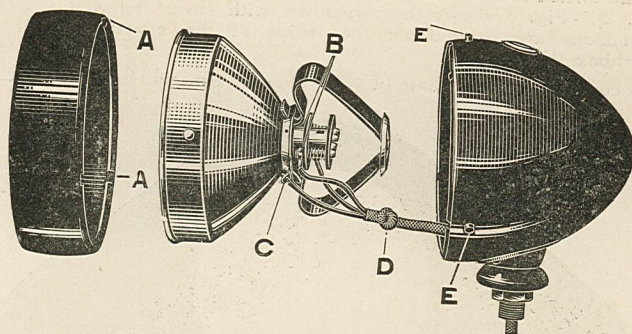


Fig. 5. Internal arrangement of Lamps.

- A—slots in rim which engage with studs E.
- B—spring terminals.
- C—spring terminal for "return" cable.
- D—knot in cable to take strain from terminals.

A battery may be perfect in design and construction, but is always subject to diminution in capacity by neglect on the part of the user. During the normal action of the battery, water is given off from the acid solution in the form of gases, and this is why it is most important that the battery should be inspected regularly, as the acid level must be maintained about $\frac{1}{4}$ -in. above plates by adding distilled water to make up for loss by evaporation. (Obtain distilled water from your chemist.) Should any acid become spilled, it must be replaced by solution of 1 part pure brimstone sulphuric acid to 5 parts distilled water = 1.225 sp. gr. When mixing solution, always add acid to the water, not water to the acid. Allow solution to cool before filling up.

Never leave a battery standing when run down, it must be recharged immediately, otherwise battery may be permanently injured.

Always use small lights only when car is standing or being used for town work.

REMOVING LAMP FRONTS.

The fronts of the lamps are secured by a bayonet fixing. To remove, hold the sides of the lamp (towards the back) with the fingers of both hands, pressing the rim evenly with the thumbs and palms, and then rotate the front of the lamp to the left as far as it will go. The fixing will then be released. *Do not press the front of the lamp without taking the strain as indicated, or the setting of the lamp may be affected.*

The reflectors are likewise attached by a bayonet fixing, but it is only necessary to remove them for the purpose of disconnecting the cables from the terminals inside. When replacing reflectors, the word "TOP"

stamped on the rim must be at the top of the lamp, or the front will not subsequently engage.

Wiring Lamps.—The ends of the cables are threaded through holes in the terminal pins, being secured by a spring loaded disc (Fig. 6). Do not allow the bared ends of the cables to project more than $\frac{1}{16}$ -in. through the holes in the terminals. A similar spring clip is also provided for the common "return" cable. The method of securing this is indicated in Figs 7 and 8.

FOCUSSING AND SETTING THE LAMPS.

Focussing should always be carried out on the road and not at short range in the garage. It will be found that the bayonet holder into which the bulb is fitted has three sets of sockets, into which the pins on the bulb may be fitted, giving three positions of the bulb with respect to the reflector. One of these three positions will give a correctly focussed light, i.e., one not having a black spot in the centre of the lumination.

It is now necessary to check the setting of the lamps themselves. These are fitted on a ball and socket device, and can easily be moved in any direction, up or down or sideways, by loosening the nut immediately under the lamp bracket. Any desired setting can then be obtained, but we suggest that the left or nearside light shining straight forward, and the right or offside light striking the near side of the road about one hundred yards ahead is an arrangement which is less likely to dazzle oncoming traffic, while providing the illumination required.

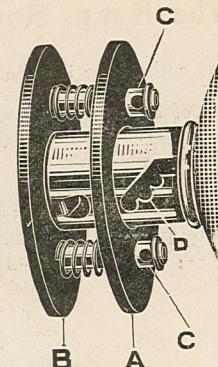


Fig. 6.

- A—movable fibre disc.
- B—fixed disc.
- C—terminal holes.
- D—focussing notches.

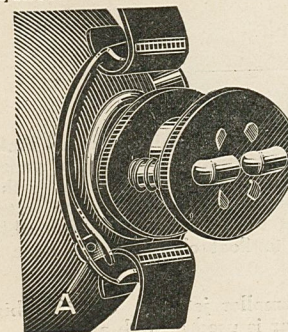


Fig. 7.

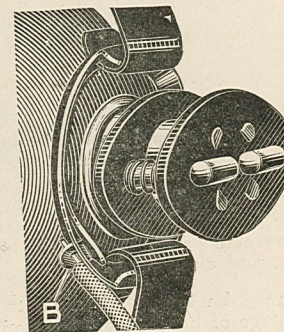


Fig. 8.

THE TAIL LAMP

is provided with a flange for fixing to the car, and the front is secured by spring pegs. To detach front for fitting new bulb, depress studs and withdraw front.