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SpecificationImprovements in Pole Operation of Luminaires

This invention relates to the pole operation of luminaires, i.e. light fittings which are usually mounted at a high level for providing illumination of a scene, typically in a television or cinematograph studio. Such
5 light fittings include floodlights and various kinds of spotlight, and are often provided with so-called barn doors for modifying the beam pattern.

As a luminaire is often mounted at high level, sometimes a very high level, so called remote control poles
10 have been produced to enable remote adjustment of the luminaire, i.e. from the floor or ground, in respect of pan (rotation), tilt, and focus, on/off switching and intensity selection, and also barn door movement.

One known pole operator has a pole end fitting in
15 the form of a hook which can be engaged with a bent wire on a fitting which attaches to the drive shaft to the luminaire. Another known pole operator has a pole end fitting in the form of a bayonet cup which engages a spigot and crossbar on the luminaire. A third known pole operator
20 has a hooked end fitting on the pole which can be engaged with a crossbar spanning a bell-shaped fitting which

attaches to the luminaire drive shaft.

It is an object of this invention to provide an improved method of pole operation of a luminaire, and an improved remote control pole and combination therewith of
5 a luminaire for carrying out such method.

According to one aspect of the invention, in a method of pole operation of a luminaire, a pole for remote adjustment of the luminaire has an end fitting of magnetic or magnetisable material which is engaged in driving
10 connection with a fitting of magnetically susceptible material attached to the drive shaft to the luminaire; the pole end fitting being demagnetised prior to disengagement.

According to another aspect of the invention, a
15 pole operator for a luminaire comprises a pole and an end fitting thereon which is of magnetic or magnetisable material.

According to still another aspect of the invention, a luminaire and pole operator combination comprises:

20 a) a fitting of magnetically susceptible material attached to the drive shaft to the luminaire; and

b) a pole having an end fitting of magnetic or magnetisable material for cooperation with said fitting on the luminaire;

25 wherein the two fittings have mating shapes which

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enable a driving connection to be established from the pole end fitting to the luminaire drive shaft fitting.

The two fittings are preferably male and female fittings which are correspondingly cone shaped.

5 The end fitting on the pole is preferably an electromagnet, but may be a permanent magnet having an associated demagnetising coil.

10 In accordance with a preferred feature, the pole end fitting is carried by a tiltable pole head. This enables ready adjustment of the luminaire by means of the pole operator even when access to the floor or ground beneath the luminaire is restricted, so that pole operation has to be carried out with the pole at an angle to the vertical.

15 Thus, in a preferred arrangement, the pole end fitting is carried by the tiltable pole head, the latter having an outer part rotationally mounted on a rotationally fixed inner part, and the end fitting is carried by the outer part. This end fitting has a magnetic coil
20 (electromagnet coil or demagnetising coil) fixedly associated therewith, and the coil is powered through brushes and slip rings, whilst the pole is hollow to accommodate a power line which connects to the coil through said brushes and slip rings.

25 Conveniently, the hollow pole can also accommodate

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a flexible mechanical drive to the rotary outer part of the tiltable pole head and also, when the pole head is tiltable on a spring support, accommodate a tensioning wire for tilting the head against the restoring force of
5 the spring.

If desired, the luminaire drive shaft fitting may also have a crosspiece for engagement by an alternative pole driver having a hooked end fitting.

When employing the method and apparatus of this
10 invention, the electromagnet can be switched on as the magnetic cup approaches the luminaire spigot, and thereby become self engaging without the problem of trying to engage a hook on to a small crossbar at long range. In the latter case, the luminaire is often set swinging on
15 its mounting and is difficult to focus and set. Similarly, when the conventional hooked pole is disengaged after luminaire adjustment, the act of disengagement often disturbs the luminaire whereas, with the pole operator of the invention, the act of switching off
20 the magnet readily enables disengagement without disturbance. The same method can be equally carried out using a permanent magnet and associated buck coil for demagnetisation.

In the accompanying drawings:

25 Figure 1 is a diagrammatic axial cross section

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through a pole operator, and

Figure 2 shows a matching luminaire fitment.

The pole operator shown in Figure 1 comprises a pole 10 having a head, generally referenced 12, tiltable
5 relative to the main portion of the pole on a spring support 14.

The pole head 12 comprises a hollow inner part 16, generally of cylindrical form, about which can rotate an outer part 18, also generally of cylindrical form. The
10 references 20 denote bush bearings providing the rotary mounting for the outer part 18 of the head. This outer part 18 is integrally formed at its outer (upper) end as a conical cup-shaped female fitting 22 of magnetic material, associated with a coil 24. This cup/coil
15 combination 22, 24 constitutes an electromagnet.

Power for the magnet is supplied from a power line 26 via brushes and slip rings 28, and it can be seen that the pole 10 is hollow to accommodate not only the power line but also a flexible sheathed cable drive 29 by means
20 of which the cone drive 22 can be driven in rotation by a remote motor, and a tensioning wire 30 enabling the head 12 to be tilted to a required angle by pulling on the wire at the base of the pole.

It may be practicable and advantageous to provide
25 a motor drive unit within the pole, either mains or

battery operated and controllable by push buttons at the base of the pole. A single such motor drive unit could be operable to power all mechanical movements associated with adjustment of the luminaire, as compared
5 to the three luminaire motors which are conventionally employed.

In use, the pole is approached to the luminaire and the magnetic cone drive is switched on. The cone drive fitting 22 is thus substantially self engaging to
10 a matching cone shaped male fitting 40 attached to the drive shaft 42 to the luminaire (see Figure 2). When engagement has been effected, pan, tilt and focus adjustment may be carried out through the conventionally provided gear mechanism in the luminaire or alternatively,
15 when a motor drive unit is provided on the hollow pole, by selective operation of push buttons at the base of the pole. Remote switching and intensity selection can also be carried out, whilst the barn door flaps at the front of the luminaire can be moved by utilising the magnetic
20 attractive force produced by the switched on cone drive fitting 22 when it is approached towards said flaps.

This method of operation only requires that the complementary cone-shaped fitting 40 on the luminaire should be of magnetically susceptible material, and
25 likewise the barn doors, as would in any event normally

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be the case for such components or otherwise may have ferrous tabs applied.

Prior to disengaging the cone drive fitting 22 from the luminaire (or moving it away from the barn doors),
5 the magnetic fitting is switched off or is demagnetised, thereby to enable ready detachment without disturbance of the adjusted luminaire (or barn doors).

As also shown in Figure 2, the luminaire fitting 40 is also provided with a crossbar 44 enabling alternative
10 operation and adjustment of the luminaire by a conventional hooked pole operator.

Attention is also drawn to the tiltable head 12, which is conveniently about 30 cm long and by means of the tensioning wire 30 can be bent over to enable the
15 drive to be effected with the pole at an angle to the vertical. This is important because more often than not the floor or ground directly beneath a luminaire is obstructed. The electrical and mechanical connection lines within the hollow pole have minimal effect on such
20 tilting head movement and are minimally affected by such movement.

Finally, it will be appreciated that the embodiment described with reference to the drawings is by way of example only and may be modified in various ways within
25 the scope of the invention defined by the appended claims.

Claims

1. A method of pole operation of a luminaire,
according to which a pole for remote adjustment of the
luminaire has an end fitting of magnetic or magnetisable
material which is engaged in driving connection with a
5 fitting of magnetically susceptible material attached to
the drive shaft to the luminaire; the pole end fitting
being demagnetised prior to disengagement.
2. A method according to claim 1, wherein the two
fittings are male and female fittings which are
10 correspondingly cone shaped.
3. A method according to claim 1 or claim 2, wherein
the end fitting on the pole is an electromagnet.
4. A method according to claim 1 or claim 2, wherein
the end fitting on the pole is a permanent magnet having
15 an associated demagnetising coil.
5. A method according to any of claims 1 to 4, wherein
the pole end fitting is carried by a tiltable pole head.
6. A method according to any of claims 1 to 5,
according to which the pole end fitting is rotatably
20 mounted on the pole.
7. A method according to claim 6 when appendant to
claim 5, according to which the pole head has a non-
rotatable part on which is mounted a rotatable part

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carrying the pole end fitting.

8. A method according to any of claims 1 to 7, wherein the pole is hollow to accommodate mechanical and/or electrical connections to the end fitting.

5 9. A pole operator for a luminaire, comprising a pole and an end fitting thereon which is of magnetic or magnetisable material.

10. A pole operator according to claim 9, wherein the end fitting is of a conical cup shape.

10 11. A pole operator according to claim 9 or claim 10, wherein the end fitting is carried by a tiltable pole head.

12. A pole operator according to claim 11, wherein the tiltable pole head has an outer part rotationally mounted
15 on a rotationally fixed inner part, and the end fitting is carried by the outer part.

13. A pole operator according to claim 12, wherein the end fitting has a magnet coil fixedly associated therewith, and the coil is powered through brushes and slip rings.

20 14. A pole operator according to claim 13, wherein the pole is hollow to accommodate a power line which connects to the coil through said brushes and slip rings.

15. A pole operator according to claim 14, wherein the hollow pole also accommodates a flexible mechanical drive
25 to the rotary outer part of the tiltable pole head.

16. A pole operator according to claim 15, wherein the pole head is tiltable on a spring support and the pole also accommodates a tensioning wire for tilting the head against the restoring force of the spring.

5 17. A luminaire and pole operator combination which comprises:

a) a fitting of magnetically susceptible material attached to the drive shaft to the luminaire; and

b) a pole having an end fitting of magnetic or
10 magnetisable material for cooperation with said fitting on the luminaire;

wherein the two fittings have mating shapes which enable a driving connection to be established from the pole end fitting to the luminaire drive shaft fitting.

15 18. The combination according to claim 17, wherein the two fittings are male and female fittings of corresponding cone shape.

19. The combination according to claim 17 or claim 18, wherein the end fitting is carried by a tiltable pole head.

20 20. The combination according to claim 19, wherein the tiltable pole head has an outer part rotationally mounted on a rotationally fixed inner part, and the end fitting is carried by the outer part.

21. The combination according to claim 20, wherein the
25 end fitting has a magnet coil fixedly associated therewith,

and the coil is powered through brushes and slip rings.

22. The combination according to claim 21, wherein the pole is hollow to accommodate a power line which connects to the coil through said brushes and slip rings.

5 23. The combination according to claim 22, wherein the hollow pole also accommodates a flexible mechanical drive to the rotary outer part of the tiltable pole head.

24. The combination according to claim 23, wherein the pole head is tiltable on a spring support and the
10 pole also accommodates a tensioning wire for tilting the head against the restoring force of the spring.

25. The combination according to any of claims 17 to 24, wherein the luminaire drive shaft fitting also has a crosspiece for engagement by an alternative pole driver
15 having a hooked end fitting.

26. A method of pole operation of a luminaire substantially as hereinbefore described.

27. A pole operator substantially as hereinbefore described with reference to Figure 1 of the accompanying
20 drawings.

28. A pole operator and luminaire combination substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

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Fig. 1.

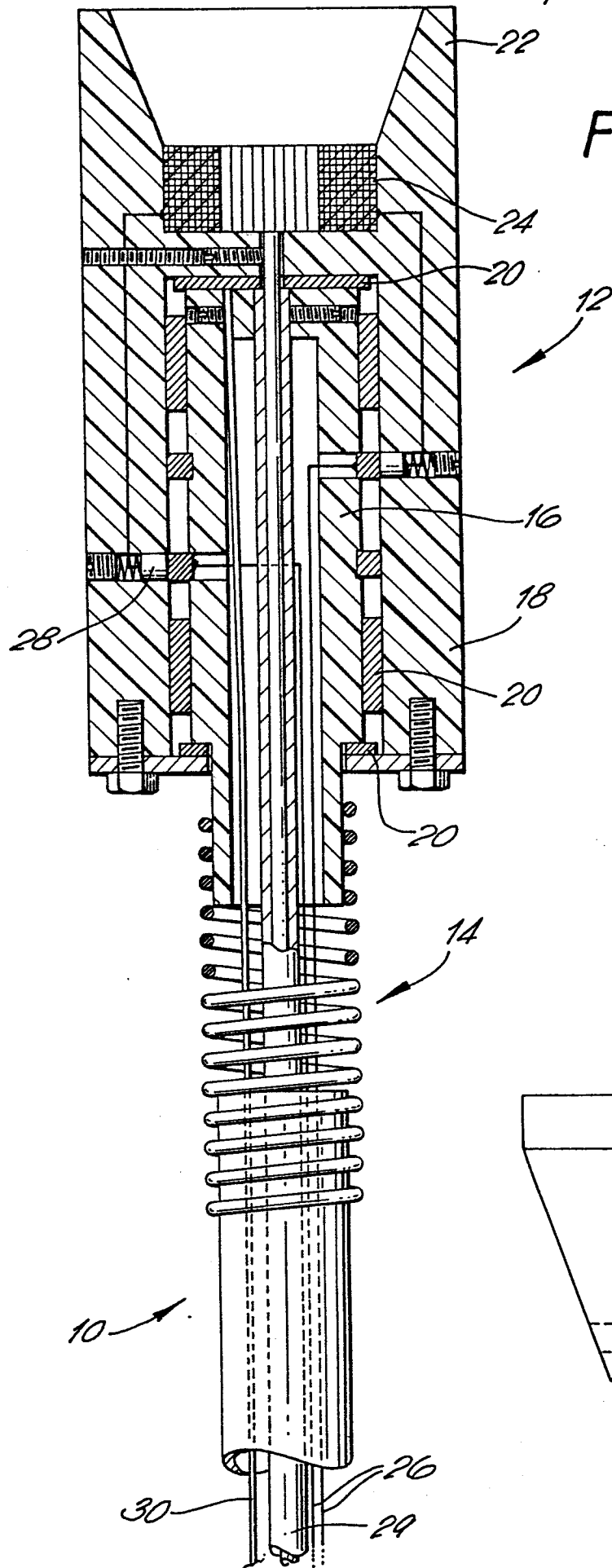


Fig. 2.

