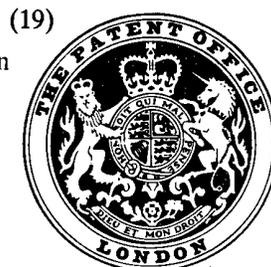


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(54) COLOUR TELEVISION CAMERA

- (71) We, N.V. PHILIPS' GLOEILAMPENFABRIEKEN, a limited liability Company, organised and established under the laws of the Kingdom of the Netherlands, of Emmasingel 29, Eindhoven, the Netherlands do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:
- The invention relates to a television camera, including more than one pick-up tube, an entrance optical system and a beam splitting prism assembly, which will be referred to herein as a television camera of the kind set forth.
- In known cameras of this kind, the positioning of the entrance optical system and, for example, a colour separation prism assembly and the corresponding pick-up tubes relative to each other, is performed by readjustment only after assembly. First, the various components are mounted in a housing, after which an optimum position relative to each other is obtained by displacement relative to each other. The pick-up tubes are then usually mounted to be radially as well as axially adjustable.
- Due to the multiplicity of adjustment mechanisms, the camera is not very robust, so that misalignment of the optical elements relative to each other can readily occur. The latter will occur particularly readily in a portable camera where, moreover, the obligatory readjustment is considered to be particularly inconvenient. Moreover, any increase of weight must be avoided as far as possible for this kind of camera.
- The invention has for an object to provide an improved television camera of the kind set forth in which said drawbacks are substantially reduced.
- According to the invention there is provided a television camera, comprising more than one pick-up tube, an entrance optical system including a lens holder provided with a reference surface for engaging a corresponding reference surface of an image-forming lens when mounted therein, and a beam splitting prism assembly, in which the lens holder, the beam splitting prism assembly and the pick-up tubes are positioned relative to mutually rigidly connected reference faces.
- Preferably, in a camera embodying the invention, the only adjustable movements provided would comprise those for refocusing, i.e. a slight axial displacement, and for raster positioning, i.e. a slight rotation of the pick-up tube assemblies.
- In an embodiment of the invention, the lens holder is provided with a reference face for the colour separation prism assembly and with a reference face for a tube holder for the pick-up tubes. The lens holder can be mounted in a camera housing which can be provided with a corresponding mounting face for this purpose.
- Misalignment by thermal expansion can be minimized by a suitable choice of materials.
- In a further embodiment of the invention, polythene sealing means are used for positioning the prisms of the colour separation prism assembly relative to each other and to the lens holder. This results in exact positioning, as well as a firm interconnection of the elements.
- In order that the invention may be clearly understood and readily carried in to effect embodiments of the invention will now be described by way of example with reference to the accompanying drawing, the single figure of which shows a part of a colour television camera embodying the invention.
- Reference will now be made to the drawing, which shows a part of a colour television camera embodying the invention comprising a tube holder I which in this case is provided with respective apertures for

three pick-up tubes 3. Each of the apertures is bounded by an axial reference face 5 and a radial reference face 7. Each of the reference faces 5 is in contact with a respective sleeve 9 which contains a corresponding pick-up tube 3 with an intermediate metal sleeve 11 and associated coil unit 13. The complete tube unit 9, 3, 11 and 13, can be mounted against the corresponding reference face 5 in known manner, for example, under the action of a spring. Each sleeve 9 may include facilities for performing a rotation of the pick-up tube about a corresponding optical axis 15 thereof and for realizing a displacement of the pick-up tube in the direction of said axis. To provide such adjustment many mechanisms are known, and in this respect, reference is made to, for example, Netherlands Published Patent Application 75 10 131. The tube holder 1 may include apertures 17 for mounting the mechanism for effecting such an adjustment. A target 19, preferably made of lead monoxide or antimony trisulphide, a mesh electrode 21, a final anode 23, an electron gun 25 and a tube base 27 of one of the pick-up tubes are also shown.

The tube holder 1 furthermore includes a reference face 29 which engages a corresponding reference face provided on a lens holder 31. The lens holder 31 is also provided with a reference face 33 on which various lenses (not shown) can be arranged in succession, and with a reference face 35 on which a first prism 37 of a colour separation prism assembly is mounted. When the prism 37 is mounted on the lens holder 31, a polythene sealing technique can be successfully used, whereby a thin polythene film is provided between the surfaces to be joined, and subsequently hardened at for example, approximately 160°C. A very well defined distance of, for example 15 micron can thus be readily realized between the elements. This can also be employed for mounting the prism 37 and further prisms 38 and 39 relative to each other.

In a further embodiment of the invention, each of the prisms 38, 38 and 39 is provided with a mounting ring having an inner diameter such that the entrance windows of the pick-up tubes, each for example provided with an anti-halo window, fit exactly therein. These rings are preferably also mounted by said polythene sealing technique, and can result in a well defined position relative to the optical system. The pick-up tubes in this embodiment are mounted in the corresponding tube holders in a slightly resilient manner, and such a technique is not uncommon. In a camera thus provided, all light-optical and electron-optical elements are in fact fixed relative to one and the same reference face, for example, the reference

face 35 of the lens holder shown in the drawing. A rotary movement and a slight axial shift can be imparted to the pick-up tube assemblies in the mounting rings.

Even though the invention has been described with reference to a camera comprising three pick-up tubes, the invention is not restricted thereto. The invention offers the same advantages for a television camera comprising two tubes.

WHAT WE CLAIM IS:-

1. A television camera, comprising more than one pick-up tube, an entrance optical system including a lens holder provided with a reference surface for engaging a corresponding reference surface of an image-forming lens when mounted therein, and a beam splitting prism assembly, in which the lens holder, the beam splitting prism assembly and the pick-up tubes are positioned relative to mutually rigidly connected reference faces.

2. A television camera as claimed in Claim 1, in which said lens holder is provided with a reference face for the beam splitting prism assembly and with a reference face for a tube holder for the pick-up tubes.

3. A television camera as claimed in Claim 1, in which said lens holder is provided with a reference face for the beam splitting prism assembly and said beam splitting prism assembly is provided with reference faces for the various pick-up tubes.

4. A television camera as claimed in any one of the preceding Claims, in which prisms forming the beam splitting prism assembly are connected to each other and to the lens holder by polythene seal connections.

5. A television camera as claimed in Claim 3, in which the reference faces for the pick-up tubes are formed by inner surfaces of rings mounted on the prisms.

6. A television camera substantially as herein described with reference to the accompanying drawing.

R.J. BOXALL,
Chartered Patent Agent,
Mullard House,
Torrington Place,
London WC1E 7HD.
Agent for the Applicants.

This drawing is a reproduction of the Original on a reduced scale

