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SUPPORT FOR LIGHT SOURCES

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The present invention relates to a novel supporting means for light sources or ray-generating sources requiring to be conveniently moved into various operating positions, for instance, for the support of adjustably-mounted X-ray tubes.

It is well known to support such a source, for instance, an X-ray tube, on a support consisting of a column provided with a vertical slidable arm which carries the X-ray tube.

In the known constructions the arm as a rule is attached to a carrier which clasps or embraces the column. The arm usually consists either of a rod asymmetrically disposed on one side of the column or of two rails symmetrically arranged on the two sides of the column.

Such known arrangements have the drawback that when the carrier arms consist of a single rod provided on one side of the column, the support is not well balanced and usually not very stable, whereas with two rails one on each side of the column the arm is wider than the column and is over-dimensioned as far as mechanical stress is concerned, as the stress on the arm is less than on the column. Such arrangement, therefore, involves a too large and too heavy arm.

One object of the invention is to provide a support having a great stability and which at the same time requires a carrying arm which is narrower than the column and the dimensions of which are determined solely by the mechanical stresses to which it is subjected.

Also to improve the appearance of such supports as a rule they are provided with a suitable finish, for instance, a highly polished chromium or nickel finish; however, as at least part of the column serves as a guide for the vertically slidable carriage in the known constructions, the polish on such a part wears off, which impairs the pleasing appearance of the device.

A further purpose of the present invention is to eliminate this objection.

According to the present invention the support consists of a column provided with a longitudinal slot along which can be suitably moved an arm carrying the light source or the source of rays. In such an arrangement the guideway for the carriage can fall within the slot, and is thus more or less concealed. The carrying arm itself may be journaled in the carriage and by means of rollers or in other suitable manner horizontally moved so that the X-ray tube or other light source may be displaced both vertically and horizontally.

To balance the weight of the carriage and of

the arm a counterweight may be used, which is preferably arranged within the column.

In order that my invention may be clearly understood and readily carried into effect, one form of construction well suited for the support of X-ray tubes will now be described more fully by way of example with reference to the accompanying drawing in which:

Figure 1 is a vertical elevation of the support with the carriage shown partly in section.

Fig. 2 is a horizontal section of the carriage along lines *a—*a** of Fig. 1.

The column of the support is preferably formed of two symmetrical tubular members which are so disposed relative to each other as to form a longitudinal slot through which passes the carriage, the tubular members being secured to each other at the top and the bottom of the column.

In the embodiment shown in the drawing the tubular members consist preferably of tubes having a trapezoid cross-section, the wide bases of which oppose each other. The tubes are interconnected at the top and the bottom and are preferably made of sheet metal which is bent to the proper shape.

Preferably the tubes are partly open at their wide bases, to which are secured plates of greater thickness, a slot being formed between the plates for the passage of the carriage.

The carriage consists of two horizontally extending bar members which are adapted to move in the slot, their ends extending beyond the slot, and are interconnected by means of two hood members which are provided with apertures.

The carriage is provided with two pairs of rollers, which are journaled at the end faces of the plates, which faces thus constitute the guideway for the rollers.

Journaled at the inner faces of each of the bars are two guide rollers which support a horizontally slidable arm, the arm extending beyond the carriage and passing through the two openings of the hoods.

The arm is designed to carry the light source, for instance, an X-ray tube, and is provided for this purpose at one of its ends (shown as the right end) with an adjustable clasp spring. On the other end the arm is provided with an end piece which limits the movement of the arm towards the right. The arm carries a scale to indicate the amount of its horizontal displacement.

The tubular members 1—1 are interconnected at their top by a hollow conical head piece 11.

To compensate for the weight of the carriage, of the arm and the X-ray tube, counterweights 14
5 are provided, which are disposed within the hollow of the tubes 1—1. The counterweights 14—14 have a cross-section substantially conforming to the cross-section of the tube.

A cable 13 is secured to the top of each of the counterweights 14—14 and passes over sheaves 12—12 mounted in the head portion of the column, the other end of the cables being secured at 19—19 to the upper carriage bar 7.

The support is preferably mounted on a movable and/or rotatable pedestal 15.

A rod 19 passing through the slot 2 and bearing on the hood members 6, is provided at one end with a hand wheel 20 and threaded at its opposite end as shown at 21. Firmly secured to rod 19 is
20 a small friction block 22, which slides along the right hand end faces of the plates 3—3. A second friction block 23 similar to block 22, is screwed upon the threaded end of rod 19 and slides along the left hand end faces of the plates 3—3. By
25 turning the hand wheel 20, the blocks 22 and 23 may be drawn tightly against the edges of plates 3—3 and the position of the carriage on the column adjusted thereby.

It will thus appear that my novel construction
30 provides for a fully balanced support for a movable light source, for instance, for an X-ray tube, in which the carriage and the arm may be of a light construction, and at the same time any damage to the finish of exposed portions of the
35 column is avoided.

In the claims the term "light source" should include also sources of rays, for instance, an X-ray tube.

While I have described my invention in connection with a specific example and in a specific application, I do not wish to be limited to same, but desire the appended claims to be construed as broadly as permissible in view of the prior art.

What I claim as new and desire to secure by
45 Letters Patent is:

1. A support for an adjustably-mounted light source, comprising a column consisting of two complementary tubular members disposed in spaced relationship to form a longitudinal slot between their opposing faces, a carriage vertically
50 slidable in said slot, a carrying arm horizontally slidable in said carriage, counterweights for the carriage and the arm, said counterweights being slidably disposed within said tubular members,
55 movably supported flexible members interconnecting said counterweights and carriage, and

guiding means for said carriage, said means being protectively enclosed by said column.

2. A support for an adjustably-mounted light source, comprising a column consisting of two tubular members mounted one opposite the other
5 to form an intermediate space, said members being interconnected at their top and bottom, a guide bar mounted on each member within said space, a carriage disposed in said space and having portions extending therefrom on both sides
10 of the column, said carriage being movable along said column, rollers pivotally-mounted on said extending portions and bearing on said guide bars to vertically guide the carriage, an arm carrying the light source, said arm being slidably disposed
15 within said carriage and being movable in its own direction through said space, a counterweight for said carriage, arm and light source, said counterweight having two parts each mounted in one of
20 said members, and flexible members movably supported at the top of said column and interconnecting said counterweight and carriage.

3. A support for an adjustably-mounted light source comprising, a vertical column formed of two tubular members of trapezoidal cross section
25 interconnected at top and bottom, said members opposing each other with their wide base and being disposed in spaced relationship to form a longitudinal slot, a carriage mounted within said slot and readily movable along said column, an
30 arm slidably mounted on said carriage and readily movable in its axial direction through said slot, said arm being adapted to carry the light source, a counterweight to balance said carriage and arm and having two parts mounted one with-
35 in each of said tubular members, and flexible members interconnecting said counterweight and said carriage and movably supported at the top of said column.

4. A support for an adjustably-mounted light
40 source comprising, a column having a longitudinally-extending through-slot, metal guide strips forming the walls of said slot, each strip forming with the walls of the column a tubular shaft, a carriage disposed within said slot and having
45 portions extending therefrom, a plurality of rollers pivotally mounted on said extending portions and bearing on said metal strips to guide the carriage along said column, an arm slidably supported by said carriage and adapted to carry
50 the light source, a counterweight having two parts each being slidably mounted within one of said shafts, and flexible members movably supported at the top of said column and interconnecting
55 said counterweight and carriage.

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