

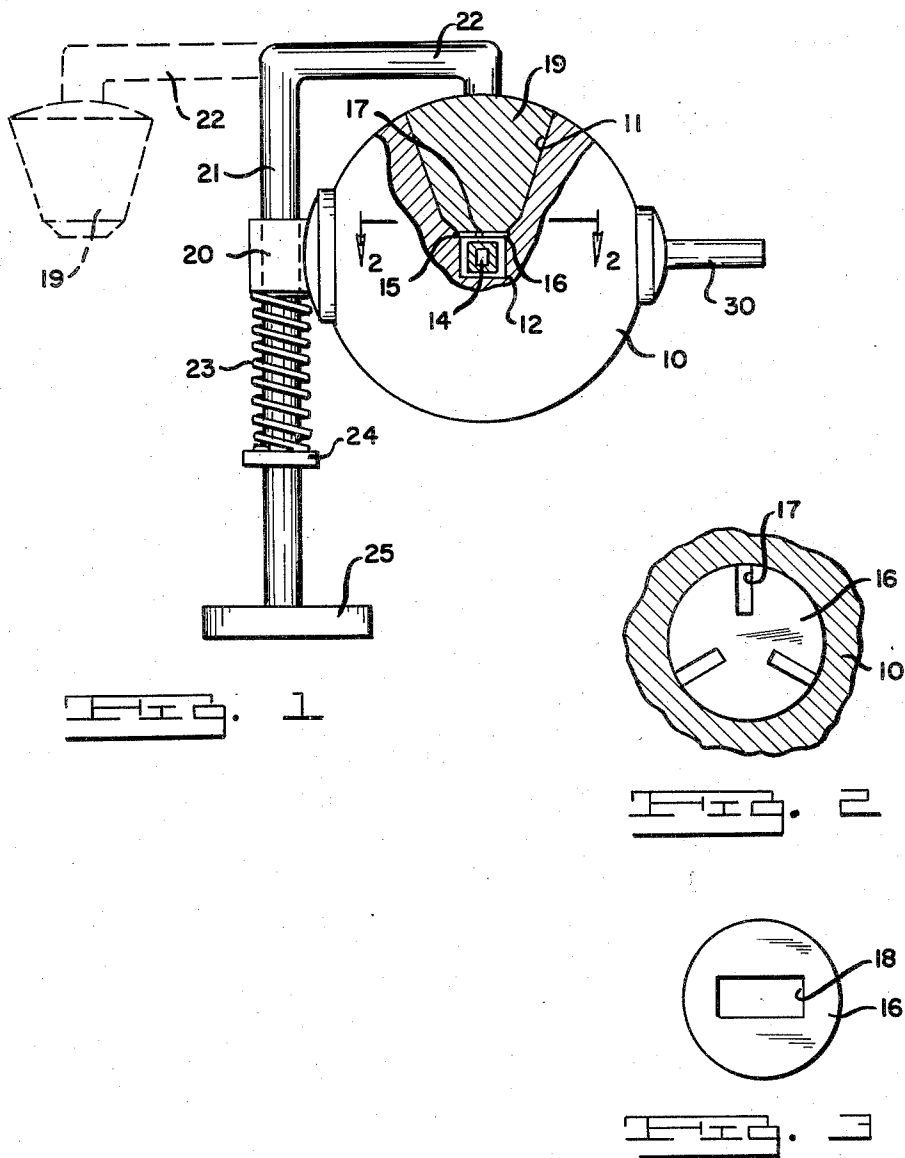
Nov. 11, 1958

J. L. TUMATH
RADIOGRAPHIC CAMERA

2,860,255

Filed June 13, 1955

2 Sheets-Sheet 1



INVENTOR.
JACK L. TUMATH
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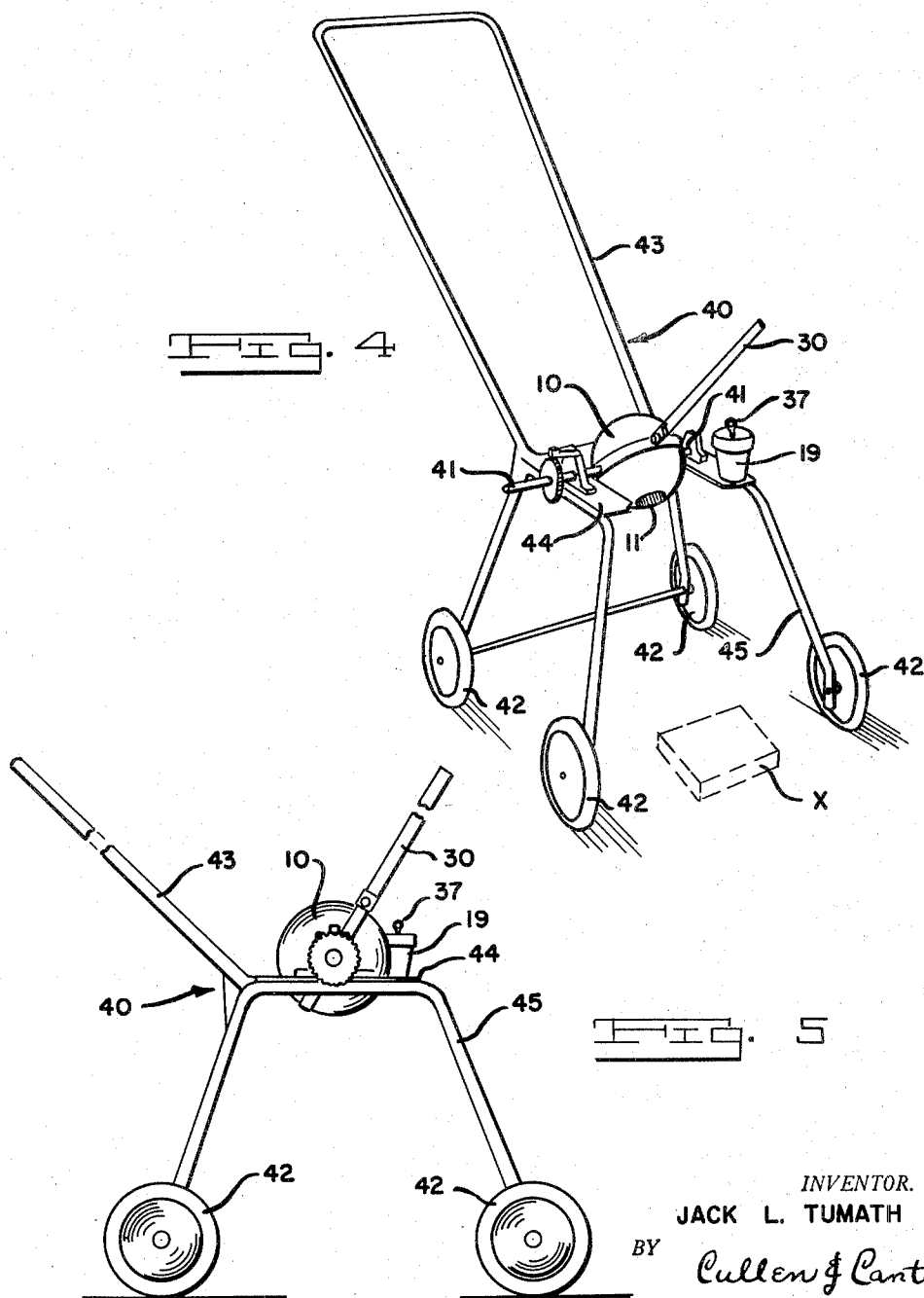
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RADIOGRAPHIC CAMERA

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Application June 13, 1955, Serial No. 514,815

4 Claims. (Cl. 250—106)

This application relates to radiographic cameras.

A radiographic camera generally comprises a container for radioactive material in the form of a body or block of material which is relatively impervious to the emanations from radioactive material. The container is equipped with a closure or shutter behind which is located the radioactive material, with a suitable means for moving the closure to and from closing position and with a suitable support.

The device is used by being placed in proximity to an object to be radiographed, with the closure or shutter closed after which the shutter or closure is moved away from the recess containing the radioactive material to expose the latter to emanate radiations towards the object to be radiographed.

One such device is shown in the literature in the patent to Gilks, 2,551,491, of May 1, 1951.

The present invention relates to improvements in such cameras. One improvement is a novel arrangement for moving the closure or shutter into and out of recess closing position. The other improvement relates to retainer arrangements for holding a capsule of radioactive material in place. A third improvement is a novel cart or wagon for the camera.

Objects and aims of the invention will best be understood upon reference to the appended drawings.

In these drawings:

Fig. 1 is a transverse elevational view with parts partly in section showing the camera with the recess closed but with dotted lines showing the position of the parts when the recess is opened.

Fig. 2 is a transverse section with parts omitted for clarity as is on line 2—2 of Fig. 1, and shows a retainer in the form of a springy disk perforated at its edges.

Fig. 3 shows a retainer in the form of a centrally perforated disk.

Figs. 4 and 5 illustrate the camera portably and movably mounted for use.

The radiographic camera of Fig. 1 comprises a solid sphere or body 10 of impervious material such as tungsten metal having a conoid recess 11 which may be conical or pyramidal or the like and is larger at the surface of the body than at its base. Behind or below the base of the recess is a small socket 12 which is actually inward of the base of the recess and opens to it and is considerably smaller than such base and contains a capsule 14 of the radioactive material which in one specific instance happens to be iridium. It could be cobalt, etc.

The boundary of the base is formed with a concentric recessed relief groove 15 in which is disposed a retainer 16 in the form of a flat circular disk of pervious material such as aluminum and this retainer prevents the capsule from falling out of the socket 12 and the body 10.

The retainer 16 of Figs. 1—2 is springy and is formed with edge slots or perforations 17 which are 120° apart to facilitate its removal for exposure of the socket. The

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retainer is made in concave shape whereby its diameter is reduced prior to its insertion into the groove 15. The retainer is placed over the socket 12 as a cover after the capsule 14 is in the socket 12. Pressure applied to the convex surface of the retainer 16 flattens it out and swells it into the groove 15 whereby the retainer is locked in place, not to be removed until replacement of the capsule 14 is desired whereupon the retainer may be removed by means of any useful tool such as a wire hook which may be inserted through any one of the slots 17 to enable the retainer to be pulled out of the groove 15 and of the body 10.

Fig. 3 shows the retainer perforation 18 as a central perforation.

The conoid recess 11 may be closed or filled by means of a plug 19 of conoid form complementary to the shape of the recess to block off radiation from the capsule 14. For moving the plug into and out of recess closing position, to function as a sort of shutter for the camera, a sleeve and plunger shaft attachment which will now be described is provided. Such attachment includes a sleeve 20 permanently and thus integrally secured to the body 10 and slidably and rotatably mounting an L-shaped plunger 21 whose stem may slide and rotate in the sleeve 20 and whose cross bar 22 is secured at its end to the plug 19.

A spring 23 surrounding the stem 21 bears against the sleeve 20 and a shoulder 24 on the stem 21 for providing spring pressure which normally holds the plug 19 in recess 11.

For opening the camera the stem 21 is moved upwardly by means of the handle end 25 to lift the plug 19 out of the sphere 10 and thereafter the stem may be rotated, for example 180°, until the plug 19 clears the recess 11 whereupon release of the handle 25 will enable the spring 23 to lock the parts in the dotted line position shown with the plug thus locked in position where it clears the recess and enables the radiation beam from capsule 14 to project as desired.

Secured to the body 10 is a short shaft 30 which may be used for mounting the camera in any suitable camera mount.

The cart

Figs. 4 and 5 show the camera mounted in a cart or truck 40. The camera body has laterally projecting axle stubs 41 perpendicular to the axis of the recess 11. The cart or truck has four wheels 42 and a handle 43 and a frame 44, the latter journalling the axle stubs 41 horizontally to enable the camera to be rotated with the recess 11 traversing an arcuate path forward of the axles 41 and in a vertical plane. The forward wheels 42 are connected to the frame by L-shaped vertical members 45 only. In this way, there are no horizontal bars between the members 45 at any point forward of or below the body 10 to interfere with proper action of the camera when the camera body is rolled in the truck over an object X placed on the ground and whose radiographing is desired. The handle 40 is rearward and above the frame 44 and the wheels are below the frame, forward and rear of it.

The projecting member 30, instead of being used as a means for mounting the camera in place, here is used as a handle for rotating the camera into and out of proper position on its axles 41 in frame 44 for aiming at the object X.

Now having described the camera herein disclosed, reference should be had to the claims which follow.

What is claimed is:

1. A radiographic "camera" comprising a body having a conoid shaped recess larger on the surface of the body than at the base of the recess, a closed bottom socket

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axially inward of the base of the recess and having its open top opening to it and smaller than it, a radioactive capsule in said socket and resting against the socket bottom, a springy disc retainer for said capsule to hold it in said socket, and a conoid shaped plug filling said recess, the springy disc retainer being between the plug and the socket and being snapped into place in a flat form from its free-convex form.

2. A device according to claim 1 wherein the springy disc retainer is a normally convex snap disc of pervious material which is flattened in use so that its edge fits within a circular relief groove at the boundary of the base of the recess, and which is perforated to facilitate its removal for exposure of the socket, and which in use closes said socket and overlies the capsule.

3. A device according to claim 1 including means outside the body for moving the plug axially out of the recess to clear it, moving it thus away from the capsule, and for moving the plug laterally in a plane perpendicular to the recess axis to clear the recess, and for reverse movement to move the plug back into line with the recess and to move it back into the recess axially, said means comprising an L-shaped handle whose stem is secured to the body and is slidable and rotatable axially therein,

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and whose cross bar at its end is secured to the outer surface of the plug.

4. A device according to claim 1 wherein the body has laterally projecting axle stubs perpendicular to the recess axis, and a cart or truck having four wheels and a handle and a frame journalling the axle stubs horizontally to enable the camera to be rotated with the recess traversing an arcuate path in a vertical plane, the forward wheels being connected to the frame by L-shaped vertical members only with no horizontal bar between the members at any point forward of or below the body, the handle being rearward and above the frame, the wheels being below the frame.

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