Jan. 7, 1958 G. F. FRECKING, JR., ET AL 2,819,406

X-RAY APPARATUS

Filed June 2, 1953

FIG-1

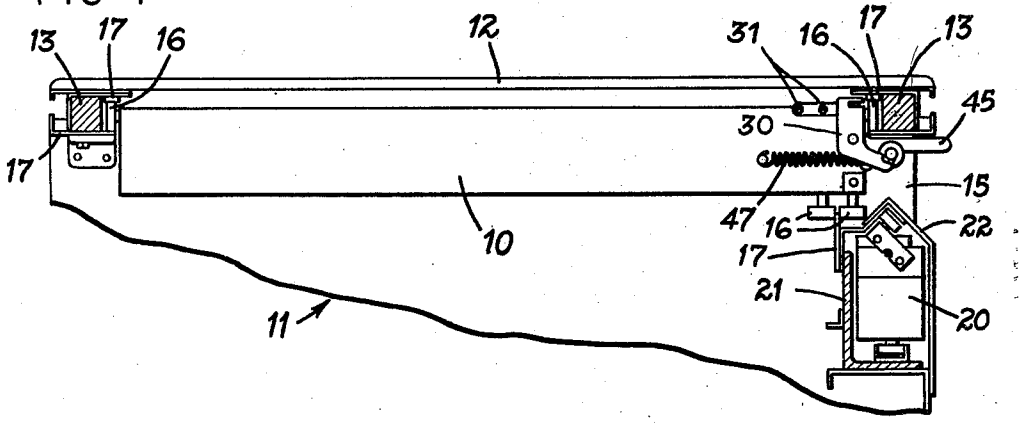


FIG-2

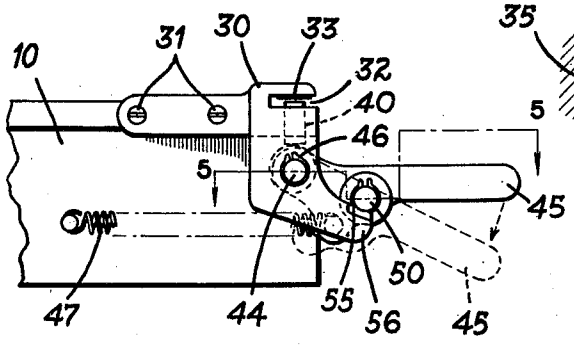


FIG-3

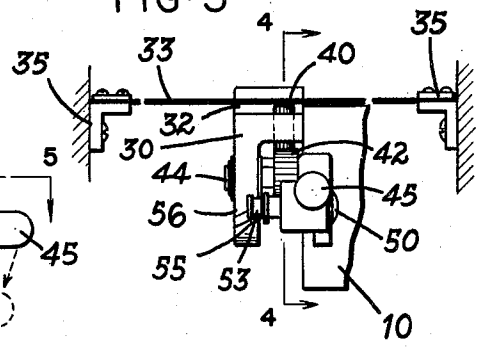


FIG-4

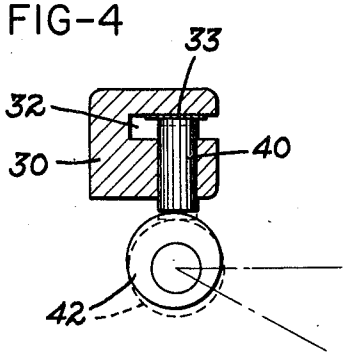
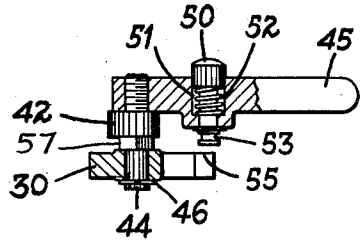


FIG-5



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X-RAY APPARATUS

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6 Claims. (Cl. 250—57)

This invention relates to a lock mechanism especially adapted for use with a moving carriage such as the bucky carriage in an X-ray table.

A primary object of the invention is to provide a lock for such uses which is both simple and highly positive in operation and which also is easily operated for both engagement and disengagement by the same hand of the user which is used to move the carriage itself, and especially to provide such a lock having an operating handle which also serves as the adjusting handle for the movements of the carriage.

It is also an object of the invention to provide such a lock mechanism which locks automatically upon release of the operating handle and which also includes a selectively operable member for retaining the handle in unlocked position.

Additional objects and advantages of the invention will be apparent from the following description, the accompanying drawing in the appended claims.

In the drawing—

Fig. 1 is a somewhat diagrammatic view in vertical section through a fraction of an X-ray table and showing a bucky mounted for travel longitudinally of the table and provided with a lock constructed in accordance with the present invention;

Fig. 2 is an enlarged view in side elevation of the lock of Fig. 1 mounted on a fragment of the bucky;

Fig. 3 is a front elevation looking from right to left in Fig. 2;

Fig. 4 is an enlarged fragmentary section on the line 4—4 of Fig. 3; and

Fig. 5 is a fragmentary view generally in section on the line 5—5 of Fig. 2.

Referring to the drawing, which illustrates a preferred embodiment of the invention, in Fig. 1, the carriage 10 represents a bucky of any suitable type mounted for travel longitudinally of an X-ray table shown fragmentarily and indicated generally at 11 and including a top 12 having main supporting bars 13 at the front and back of the top. A slot 15 is provided in the front side of the table below the top for access to the bucky. The bucky is indicated as supported by the usual rollers 16 running in or on suitable tracks 17 carried by the table structure, and the bucky counterweight 20 is similarly mounted by suitable rollers and tracks on an angle 21 which extends lengthwise of the table below the slot 15. The counterweight is shown as enclosed by a cover 22 at the front of the table and is connected by cables (not shown) to the bucky carriage.

The lock mechanism of the invention is mounted on the bucky carriage 10 to secure the bucky in any desired moved position lengthwise of the table. It includes a main lock body or casting 30 bolted or screwed at 31 to the bucky carriage. At the front of lock body 30 is a horizontally arranged slot 32 open at the front thereof, and a steel tape 33 is received through this slot and is

anchored at its ends to the opposite ends of the table, as indicated at 35 in Fig. 3. As shown, the slot 32 is materially greater in width than the thickness of tape 33 to permit free relative movement of the tape and the lock body.

A pin 40 is mounted for vertical movement in lock body 30 below slot 32, and the upper end of the pin extends into the bottom of the slot. The lock body 30 also supports control means including an eccentric cam 42 for operating pin 40 by effecting movement of the pin into frictionally locking engagement with tape 33 against the upper surface of slot 32. The cam 42 is carried by a stud 44 which is secured at one end to a handle 45 and has its other end rotatably mounted in the lock body 30 and shown as retained therein by a clip 46. With the stud 44 threaded in the handle 45 as shown, the angular position of the cam 42 with respect to the handle can be established as desired, and this result is facilitated by provision of the hexagonal portion 57 of the stud 44.

The handle 45 extends forwardly from the lock body 30 through the slot 15 in the table, and the arrangement is such that when the handle drops to its lowered positon shown in dotted lines in Fig. 2, the high portion of the cam 42 will raise the pin 40 into locking engagement with tape 33, and in the locking position of the parts, the flexibility of tape 33 provides for sufficient deflection thereof to establish a locking effect on both sides of the tape against the pin 40 and the upper side of the slot 32. Movement of handle 45 to this locking position is caused both by gravity and also by a suitable counterweighting spring 47 secured at opposite ends to the handle and to the carriage 10. When the handle is raised to approximately horizontal position, the cam will rotate sufficiently to allow the pin 40 to drop out of engagement with tape 33, and the carriage 10 will then be free to move lengthwise of the table.

Means are provided for releasably latching the handle 45 in its raised or unlocking position. A plunger 50 is mounted in a bore 51 in handle 45 and is provided with a biasing spring 52 normally urgng the large end of the plunger to a projected position on the opposite side of the handle from body 30, as shown in Fig. 5. The other end of the plunger projects through the other side of the handle and is provided with a circumferential groove 53 adapted for latching engagement with a sharpened edge 55 on an arm portion 56 projecting forwardly from the lock body 30.

In use, when the handle 45 is released, it normally drops immediately to locking position under the influence of both gravity and the spring 47. When the carriage 10 is to be moved, the operator needs only to lift handle 45 to its release position, and this handle can also then be used to control the lengthwise movement of the carriage. As soon as the carriage is in its desired position, the operator needs only to release the handle, and it will then immediately return to its locking position.

During such normal operation of the bucky carriage, the plunger 50 will remain in its position shown in Fig. 5 and will not affect operation of the lock. If on the other hand, the operator wishes to hold the lock released, it is only necessary for him to raise the handle to its release position, press plunger 50 with his thumb or finger, and then lower the handle until the groove 53 on the plunger engages with the edge 55 as shown in Figs. 2 and 3. In this position, the lock remains released, but to return it to locked position, it is necessary only to raise handle 45 sufficiently to permit spring 52 to retrack plunger 50, and then release of the handle will cause it to return automatically to its locking position as described.

While the form of device herein described constitutes

a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of device, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A lock adapted to control the movement of a carriage with respect to an X-ray table having means supporting said carriage for such movement comprising a lock body having a slot therethrough, means for mounting said lock body on said carriage with said slot open longitudinally of said table, a substantially non-stretchable tape freely receivable in said slot separate from said supporting means for said carriage, means for anchoring the opposite ends of said tape to said table, a pin in said lock body movable into one side and transverse of said slot, an eccentric cam rotatably carried by said lock body in engagement with one end of said pin and operative upon rotation thereof to urge said pin into said slot against said tape to frictionally lock said tape against the other side of said slot, handle means extending from said lock body for rotating said cam, and spring means connected between said lock body and said handle normally biasing said handle in a direction to rotate said cam to the locking position of said pin.

2. A lock adapted to control the movement of a carriage with respect to an X-ray table having means supporting said carriage for such movement comprising a lock body having a slot therethrough, means for mounting said lock body on said carriage with said slot open longitudinally of said table, a substantially non-stretchable tape freely receivable in said slot separate from said supporting means for said carriage, means for anchoring the opposite ends of said tape to said table, a pin in said lock body axially movable into one side and transversely of said slot, an eccentric cam rotatably carried by said lock body in engagement with one end of said pin and operative upon rotation thereof to urge said pin into said slot against said tape to frictionally lock said tape against the opposite side of said slot, handle means extending from said lock body for rotating said cam, means normally biasing said handle means in the direction to rotate said cam to the locking position of said pin, and a selectively operable plunger on said handle cooperatively engageable with a portion of said lock body for holding said handle in the unlocked position of said pin and cam.

3. A lock adapted to control the movement of a carriage with respect to an X-ray table having means supporting said carriage for such movement comprising a lock body having a slot therethrough, means for mounting said lock body on said carriage with said slot open longitudinally of said table, a substantially non-stretchable tape freely receivable in said slot separate from said supporting means for said carriage, means for anchoring the opposite ends of said tape to said table, releasable means in said lock body movable into said slot for frictionally locking said tape within said slot, means normally counterweighting said releasable means to the locking position thereof, handle means extending forwardly from said lock body for releasing said releasable means against said counterweighting means, a plunger carried by said handle forwardly of said body and movable laterally of said handle in projecting relation therewith, an abutment on said lock body adapted to engage said plunger upon projection thereof from said handle to hold said handle against said counterweighting means in the unlocking position thereof, means normally biasing said plunger to retracted position out of engagement with said abutment, said plunger and said abutment including interfitting parts responsive to engagement thereof to retain said plunger in position holding said handle in the unlocked position thereof and responsive to movement of said handle from said held position away from said locking position for releasing said plunger to provide for subsequent movement of said handle to the locking position thereof.

4. A lock adapted to control the movement of a carriage with respect to an X-ray table having means supporting said carriage for such movement comprising a lock body having a slot therethrough, means for mounting said lock body on said carriage with said slot open longitudinally of said table, a substantially non-stretchable tape freely receivable in said slot separate from said supporting means for said carriage, means for anchoring the opposite ends of said tape to said table, a pin in said lock body movable axially into said slot, an eccentric cam rotatably carried by said lock body in engagement with one end of said pin and responsive to rotation thereof to urge said pin into said slot for frictionally locking said tape within said slot, handle means extending forwardly from said lock body for rotating said cam, means normally counterweighting said handle means in the direction to rotate said cam to the locking position of said pin, a plunger carried by said handle forwardly of said body and movable laterally of said handle in projecting relation therewith, an abutment on said lock body adapted to engage said plunger upon projection thereof from said handle to hold said handle against said counterweighting means in the unlocking position thereof, means normally biasing said plunger to retracted position out of engagement with said abutment, said plunger and said abutment including interfitting parts responsive to engagement thereof to retain said plunger in position holding said handle in the unlocking position thereof and responsive to movement of said handle from said held position away from said locking position for releasing said plunger to provide for subsequent movement of said handle to the locking position thereof.

5. A lock adapted to control the movement of a carriage with respect to an X-ray table having means supporting said carriage for such movement comprising, a lock body having a slot therethrough, means for mounting said lock body on said carriage with said slot open longitudinally of said table, a substantially non-stretchable tape anchored at its opposite ends to said table and freely receivable in said slot, releasable means in said lock body movable into said slot for frictionally locking said tape within said slot, means normally biasing said releasable means to the locking position thereof, a handle extending from said lock body arranged to release said releasable means against said biasing means, a plunger carried by said handle and movable laterally of said handle in projecting relation therewith, said plunger upon projection thereof from said handle being adapted to engage an abutment on said lock body to hold said handle against said biasing means in the unlocking position thereof, and means normally biasing said plunger to a retracted position out of engagement with said abutment.

6. A lock adapted to arrest the movement of a carriage with respect to an X-ray table having means supporting said carriage for movement longitudinally thereof comprising a lock body having a slot therethrough, means securing said lock body to said carriage with said slot open longitudinally of said table, a substantially non-stretchable tape anchored at its opposite ends to opposite ends of said table and freely receivable in said slot, a pin in said lock body movable into said slot, an eccentric cam rotatably carried by said lock body in engagement with one end of said pin and operative upon rotation thereof to urge the other end of said pin into contact with said tape to frictionally lock said tape within said slot, a handle secured to said cam for rotating the same between a locking position where said other end of said pin engages said tape and an unlocking position where said other end of said pin does not engage said tape, spring means normally biasing said handle to maintain said cam in the locking position thereof, and a selectively operable plunger carried by said handle and

movable laterally of said handle from a retracted position to a projected position, means normally biasing said plunger toward the retracted position, and an abutment on said lock body arranged to engage said plunger in the projected position thereof to hold said handle against said spring biasing means in the unlocking position of said cam and to maintain said plunger in the projected position until released by further movement of said handle against said spring biasing means.

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