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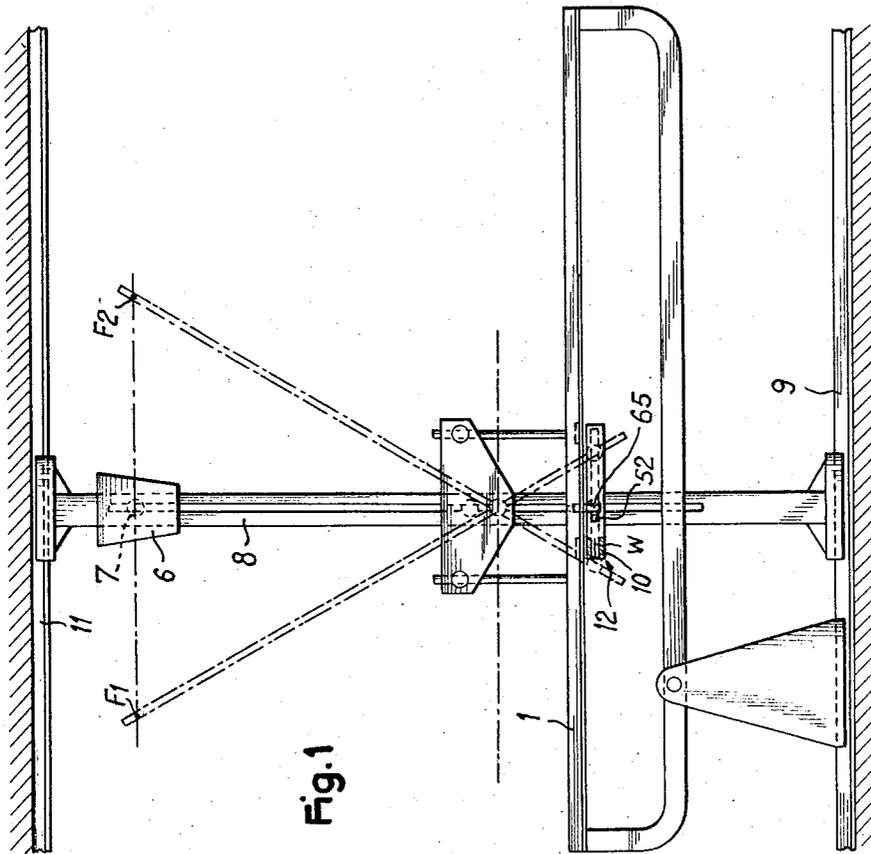
P. LANDAU

3,291,983

CASSETTE CASE FOR SIMULTANEOUS TOMOGRAPHY
CONTAINING A STOCK OF FILM ASSEMBLIES

Filed April 29, 1963

3 Sheets-Sheet 1



Dec. 13, 1966

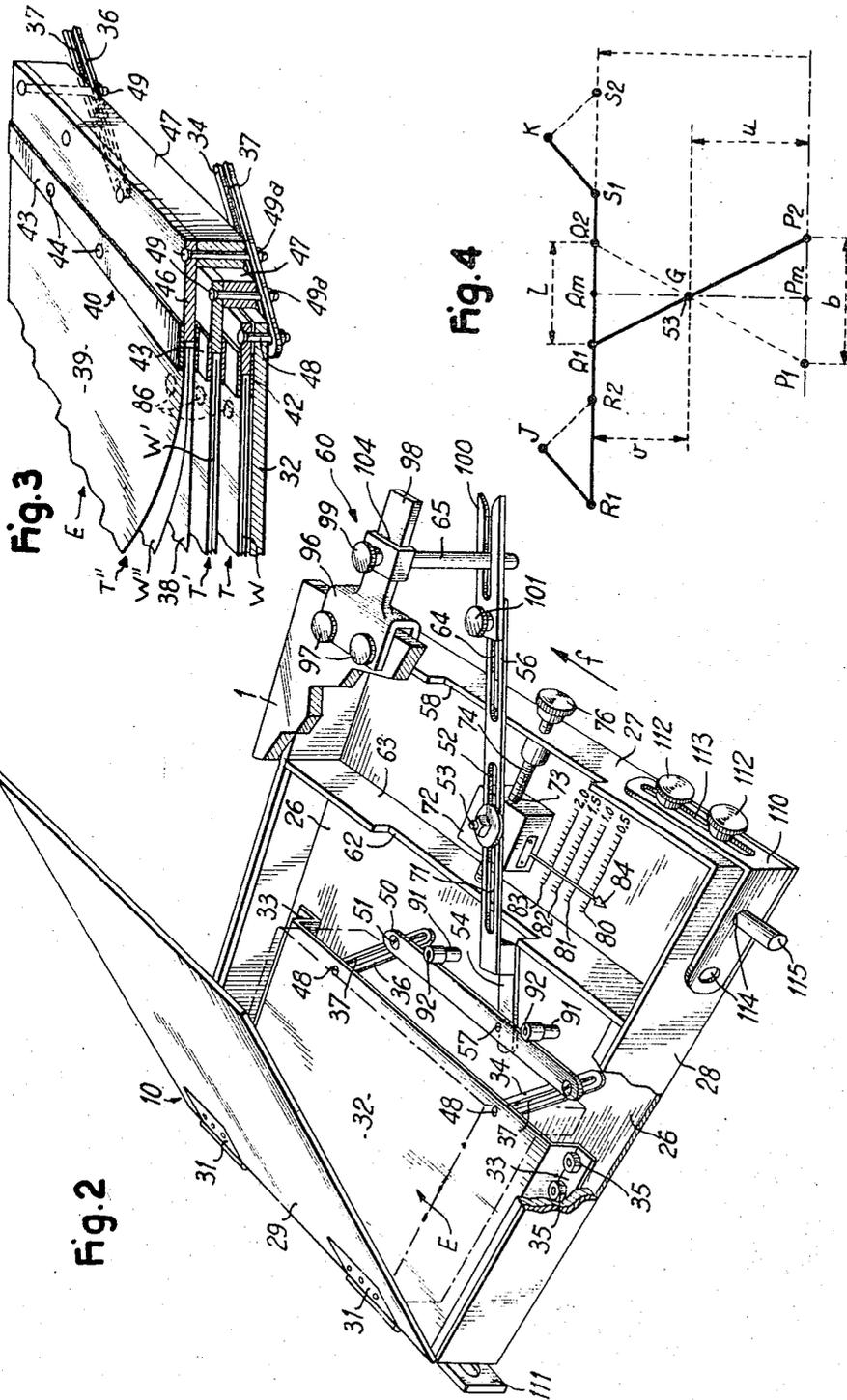
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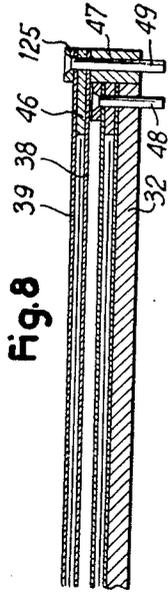


Fig. 8



Fig. 9

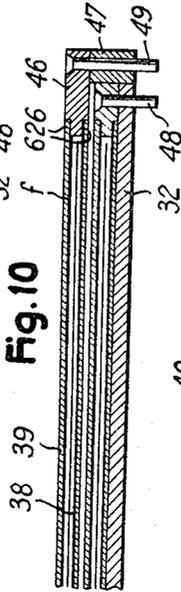


Fig. 10

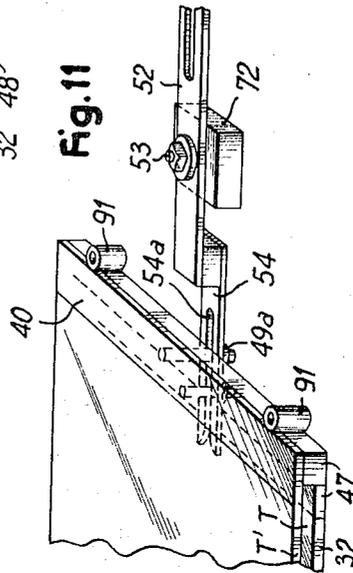


Fig. 11

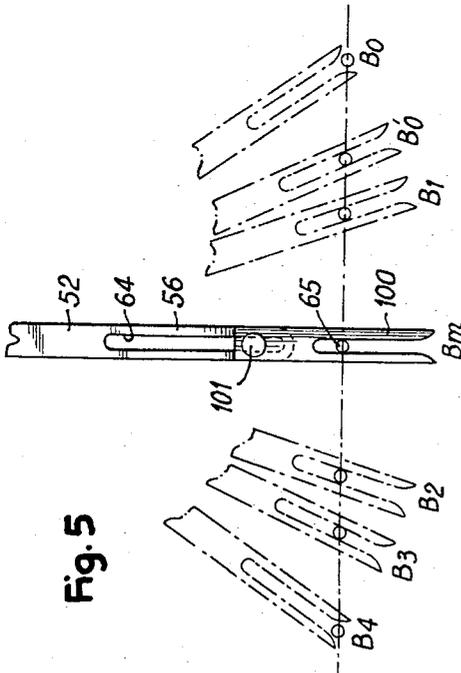


Fig. 5

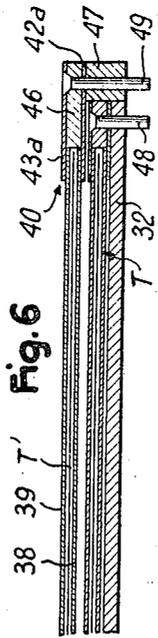


Fig. 6

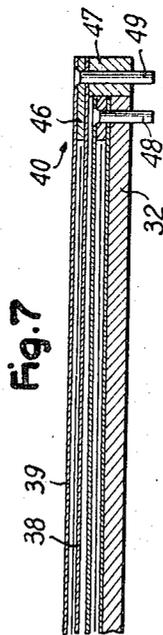


Fig. 7

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CASSETTE CASE FOR SIMULTANEOUS TOMOGRAPHY CONTAINING A STACK OF FILM ASSEMBLIES

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896,899

7 Claims. (Cl. 250—61.5)

The present invention relates to a simultaneous tomography method in which the film and intensifying screens assemblies of a stack of such assemblies disposed in a case having an anti-diffusion grid (Bucky diaphragm), are made to effect proportional relative movements in the course of a sweep of the radiogenic head focus.

The principle of such a method has been described in various publications and in particular by H. Gajewski and E. Liese in Fortschr. Roentgenstr. 83-562, 1955, under the title: "Das Simultanschichtverfahren-Aufnahmetechnischer Grundlagen und medizinische Anwendung."

In applicant's French Patent No. 1,265,256 there is described a radiologic unit for carrying out the aforementioned method. This unit, which comprises a rotary drum controlling the differential displacements of the films, has certain complications, in particular as concerns the drive of the drum. It also has the drawback of requiring a special case having an anti-diffusion grid and a radiologic table adapted to receive such a case.

The object of the invention is to provide a cassette drawer which can be inserted in a case having an anti-diffusion grid or Bucky diaphragm, of conventional type, there being added to the radiologic unit an element which is very simple in construction and in principle detachable.

In the cassette drawer according to the invention, the film and screens assembly superimposed on any assembly of the stack is disposed relative to the latter in such manner as to project toward one of the longitudinal edges of the cassette, and the projecting parts are provided with respective guide means associated with one another and connected to an actuating mechanism which co-operates with an element of the radiologic unit outside the case, whereby in the course of the longitudinal travel of the case said element constrains the actuating mechanism to impart relative displacements to the film and screens assemblies in a direction parallel with the longitudinal edges of the cassette and proportional to the displacement of the case relative to the table. The projecting part comprises preferably two pins which are centered on a line parallel with the longitudinal edges of the cassette and are engaged in respective slots in two parallel levers which are pivoted to the cassette and adapted to undergo an angular movement in the course of the longitudinal travel of the case in such manner that each film and screens assembly remains at a fixed distance from the longitudinal edges of the cassette.

The angular movement of the levers is determined by a link which connects them together and is subject to the action of an actuating element which is capable of undergoing an angular and linear movement relative to the cassette and whose end extends out of the cassette and bears on said element of said radiologic unit, which is a fixed abutment of the radiologic table.

Owing to its compact construction, the arrangement just described can be incorporated in any existing tomographic unit of the unidirectional, vertical or horizontal type.

Further features and advantages of the invention will be apparent from the ensuing description, with reference to the accompanying drawings to which the invention is in no way limited.

In the drawings:

FIG. 1 is an assembly view of a tomographic unit;

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FIGS. 2 and 3 are diagrammatic perspective views with parts in section, of respectively a cassette drawer and a stack of films employed in the unit shown in FIG. 1;

FIG. 4 is a geometric diagram illustrating the operation of the linkage shown in FIG. 2;

FIG. 5 is a diagram showing the manner in which the linkage operates;

FIGS. 6-10 are variants of the arrangement of the film and screens assemblies, and

FIG. 11 is a diagrammatic perspective view of a variant of the connection between the actuating mechanism and the stack of film and screens assemblies.

FIG. 1 shows a radiographic unit equipped for taking tomographic pictures. This unit comprises a table 1 on which the patient to be examined can lie.

For the purpose of a radiologic examination of the patient, there is provided a radiogenic head 6 connected to a journal 7 which is mounted on a vertical column 8 and permits orientating the head 6. The radiogenic focus is located on the axis of the journal 7. The column 8 can be moved in translation in a direction parallel with the table owing to the provision of rails 9 and 11 so as to cause the radiogenic focus to sweep between the positions F_2 and F_1 . The radiologic films (a single film is shown at W in FIG. 1) which are adapted to receive the image at different levels of the opacities presented by the organs of the patient examined, are each disposed between two intensifying screens and are contained in a cassette or support 10 engaged in a light-tight case 12 disposed as near as possible to, and under, the table. The top of this case comprises an anti-diffusion grid to which normally movement is imparted in the course of the emission of the X-rays so as to prevent the wett of the grid being reproduced on the film. This case which is conventionally called "Bucky diaphragm" can be displaced in a direction parallel with itself owing to the provision of guide elements (not shown).

FIG. 2 shows the cassette drawer or support 10 according to the invention which can be substituted for the conventional drawers of the cases having an anti-diffusion grid, for carrying out simultaneous tomography in combination with the stack E of film and screens assemblies shown in FIG. 2. This cassette drawer has a generally rectangular-sided shape and comprises a bottom 26 provided with walls 27, 28 and a lid 29 which is mounted by means of hinges 31 on the rear wall and, when closed, renders the cassette light-tight. The lid can be positively closed by an appropriate closing means. A plate 32 having feet 33 and adapted to receive the stack E of film and screens assemblies, is secured to the bottom 26 by screws and nuts 35. Pivoted to the forward edge of this plate are two levers or arms 34, 36 each of which has an elongated aperture or slot 37.

As can be seen in FIG. 3, each film and intensifying screens assembly comprises a radiologic film W, W', W'' . . . located between two thin intensifying screens 38, 39.

Each intensifying screen 38, 39 comprises an inextensible support which is preferably composed of metal having small atomic weight, for example aluminium, and is transparent to X-rays and opaque to light, the thickness thereof being about 200μ . The advantage of the metallic nature of the screens support is that it is possible to use a very thin intensifying screen. Above all, due to its metallic nature the sliding surfaces can all be earthed thereby avoiding electrostatic discharges which would occur owing to friction if the surfaces were of insulating material, such as thermoplastic material, and would be harmful (sparks could deteriorate the screens and mark the film). The support of the screens is covered with a layer of calcium tungstate or the like having a visible fluorescence when exposed to X-rays. The intensifying power of the screens increases downwardly so as to com-

compensate the absorption of the X-rays by the overlying assemblies.

The radiologic film W has a thickness of the order of 150 μ . Each film and screens assembly has an overall thickness of the order of a millimeter.

The stack E normally comprises six film and screens assemblies but for reasons of clarity only three assemblies have been shown, namely T, T', T'', the assembly T being secured to the top of the plate 32.

The different assemblies of a stack of assemblies are so arranged that each of them, with the exception of the bottom assembly which is fixed, is capable of sliding in a direction parallel with itself relative to the subjacent assembly in the longitudinal direction of the radiologic table (arrow f). For this purpose, the two screens 38, 39 of the film and screens assemblies are retained in a mount 40 comprising two thin metal strips 42, 43 which are stuck to the adjacent edges of the two screens and are interconnected for example by rivets 44 which extend through a member 46 whose thickness is equal to that of the film and screens assembly. There is thus obtained a sort of binding which holds the edges of the two screens stationary between which the film W, W' or W'' can be introduced or withdrawn.

The width of the strips 42, 43 of the mount 40 is the same in respect of all of the assemblies but the width of the member 46 progressively increases in a regular manner from the lower assembly to the upper assembly so that each mount can project to a fixed extent relative to the mount of the subjacent assembly when the stack is in its position of utilization.

Further, for the purpose of guiding the assemblies T', T'' as they undergo a relative sliding, a guide bar 47 parallel with the strips 42, 43 is attached to the underside of the member 46 of the mounts 40 of the movable assemblies, the vertical outer face of this bar being coplanar with the edge of the member 46 of the corresponding assembly and its vertical inner face being adapted to bear either against the outer face of the mount 40 of the subjacent assembly T' or against the edge of the plate 32 and the edge of the mount of the fixed assembly T, when the assemblies and their mounts are arranged together in the drawer 10.

This arrangement is shown in FIG. 3 in which the lower end of the guide bars 47 which is coplanar with the lower face of the plate 32 (FIGS. 2 and 3) bears against the levers 34, 36 which are pivoted to this plate by a pin 48 extending through the mount 40 of the fixed assembly T. Each guide bar 47 and the corresponding mounts 40 are maintained in their relative longitudinal position by two pins 49, 49 which extend through the mounts and the guide bars and are engaged at their lower end in the openings 37 in the levers 34, 36. These pins are retained in the levers 34, 36 by their enlarged heads 49a.

The two levers 34, 36 are maintained parallel with one another by a link 50 provided in the vicinity of its two ends with a pin 51 which forms a screw and is engaged and retained in the slots 37 of the respective levers so that these pins are slidable in these slots while permitting a relative angular movement on the part of the levers and link.

To obtain the relative sliding of the film and screens assemblies this link 50 is combined with an actuating mechanism which comprises an arm 52 having a longitudinal slot 71 in which is engaged a pin 53 which is fixed relative to the drawer. The ends 54, 56 of this arm extend on either side of the pin 53, the end 54 being pivoted by a pin 57 to the middle of the link 50 whereas the other end 56 extends out of the drawer through an opening 58 formed in the upper part of the forward wall 57. The part of the actuating arm 52 located at the rear of the pin 53 extends through a second opening 62 provided in a partition wall 63 which is parallel with the forward wall 57 and constitutes a light-screening element.

The forward end 56 of the arm 52 is adapted to co-

operate with an abutment device 60 (FIG. 2) which is secured to the radiologic table 1 in such manner that in the course of the sweep, that is, during the travel of the Bucky diaphragm, the arm effects a movement capable of transmitting to the film and screen assemblies stacked on the plate 32 a relative sliding movement through the medium of the link 50 and levers 36, 37.

The abutment device 60 comprises a fork 96 which is fixed to the table 1 by clamping screws 97 and is rigid with a horizontal strip 98 on which is slidable a block 104 which is held in position by a clamping screw 99. Secured to this block 104 is a vertical rod 65 which extends downwardly and whose axis coincides with the vertical line intersecting the radiogenic focus in the median vertical position. This vertical rod constitutes an abutment adapted to engage a fork-shaped member 100 which is slidably mounted on the end 56 of the actuating arm 52 and is capable of being adjusted in position by means of a clamping screw 104 engaged in an axial slot 64 formed in the end 56. The successive relative positions of the abutment or rod 65 and the member 100 in the course of the sweep are shown in FIG. 5 in which for reasons of clarity the Bucky diaphragm is shown in position fixed and the abutment movable. In the diagram B₀ is the starting point of the travel at which the fork member 100 is not yet engaged with the abutment 65, B'₀ is the point at which the correct speed is reached, the fork member being in engagement with the abutment 65, B₁ is the point at which the emission of the X-rays starts, B₂ is that at which the emission stops, B₃ and B₄ are the symmetrical points of B'₀ and B₀, the abutment 65 leaving the fork at B₄.

During the movement diagrammatically represented in FIG. 5 the link 50 moves in a direction parallel with itself while remaining at a fixed distance from the adjacent edge 47 of the stack, and consequently from the edge of the table, since it is for this purpose applied against the stack of film and screen assemblies owing to the provision of two pressure-applying rollers 91 which are freely rotative on vertical spindles 92 fixed to the bottom of the cassette.

The position of the pin 53 on which the actuating arm 52 is mounted can be adjusted transversely, that is, in a direction perpendicular to the longitudinal axis of the table and to the forward wall 27 of the drawer. For this purpose the pin 53, which extends through the slot 71 of the arm 52, is fixed to a block 72 which is slidably mounted on the bottom 26 of the drawer, this block having a tapped hole 73 in which is screwthreadedly engaged a screwthreaded rod 74 which can be rotated by a knob 76 outside the forward wall 27 of the drawer, this rod being journaled in this wall. The rear end of the rod 74 is journaled in the partition wall 63 under the opening 62.

Owing to the arrangement just described the displacements of the film and screens assemblies, which are movable relative to the bottom film W, are proportional to the displacements of the latter relative to the table.

The formula giving the relation between the spacing Δy between the planes of the tomographic section and the relative displacement Δx of two consecutive film and screens assemblies is approximately as follows:

$$\Delta y = \frac{c \Delta x}{2 f t g \alpha} \quad (1)$$

where

c is the distance between the radiogenic focus and the base section plane;

f is the fixed distance between the radiogenic focus and the plane of the film giving the base section;

α is half the angle of sweep.

FIG. 4 shows a geometric diagram of the operation of the linkage of the drawer just described. In this diagram G designates the pivot axis 53 of the arm 52, P

is the end point of the arm 52 which is in contact with the abutment 65 of the table, Q is the point 57 common to the link 50 and the arm 52, R and S are the points 51 common to the respective ends of the link 50 and the corresponding levers 34 and 36, the pivotal mountings 48 of the latter being designated J and K. The indices 1 and 2 added to the moving parts correspond respectively to the beginning and the end of a sweep F_1, F_2 .

The formula giving the relation between the distance v between the point G and the line Q_1, Q_2 , the distance Δy between two consecutive tomographic section planes, the distance c between the radiogenic focus and the base section plane, the distance f between the radiogenic focus and the film giving the base section, the distance $h=Qm$ Pm =distance between the line of action of the link and the fixed abutment of the radiologic table, is for a number n of film and screens assemblies:

$$v = \frac{nhf\Delta y}{nf\Delta y + c(f-c)} \quad (2)$$

which shows that v is independent of the sweep angle.

It is usual in tomography to select the spacing Δy of the sections from the following values in centimeters: 0.5-1-1.5-2.

The relation (2) therefore permits obtaining four functional scales corresponding to these respective values of Δy and giving the value of v as a function of c , that is, the position of the fundamental section plane. These scales are shown in FIG. 2 and carry reference numbers 80, 81, 82, 83 and are, for example, marked on the bottom 26 of the drawer.

The value of v corresponding to the selected values of c on each of these scales is materialized by the position of a pointer 84 rigid with the sliding block 72, so that by rotating the knob 76 and obtaining the coincidence of the pointer 84 with the value of c on the corresponding scale, the required spacing Δy between the section planes is obtained. To facilitate the work, in practice the values of c are replaced by heights of the fundamental section plane above the plane of the table, that is, by the values of $p=f-c-e$, in which e is the distance between the plane of the table and the plane of the film giving the base section.

It will be noticed in one of the corners of the intensifying screens, partly uncovered, a dotted letter A, B, C. These letters are identification marks 86 of the different pictures obtained in the course of the sweep. They can be obtained by cutting out a sheet of black paper the cut-out letter being thereafter stuck to the inner face of the screen. During the exposure of the X-rays the luminescence due to the calcium tungstate of the intensifying screens is neutralized throughout the surface occupied by the black zone of the letters so that the image of the latter is reproduced on the respective films. Each letter can obviously be repeated on any other screen so as to intensify the marking. Instead of using a cut-out black sheet it is also possible to scratch the letter on the calcium tungstate surface.

To permit adapting the cassette drawer shown in FIG. 2 to Bucky diaphragm openings having different longitudinal dimensions, the length of the wall 27 is assumed to correspond to the opening of minimum longitudinal dimension and a slidable member 110 or 111 is provided on at least two of the outer corners of the cassette adjacent the transverse wall 28. The forward member 110 is a bracket which can be fixed in position by screws 112 which extend through a slot 113 in this member. The rear member is in the form of a plate 111 provided with a slot which can be held in position in similar manner. By extending the members 110 and 111 the required amount, it is possible to insert the cassette and guide it positively in an opening having a longitudinal dimension exceeding that of the wall 27.

Provided on one of the branches of the forward bracket 110 are tapped holes 114, the distance between these

holes and the forward wall 27 of the cassette being so chosen that by screwing a stud 115 in either of the holes 114 there is obtained an abutment adapted to abut the body of the Bucky diaphragm and thereby limit to a given amount the extent to which the drawer is moved inwardly. This permits utilizing two film sizes other than that corresponding to a cassette drawer which has been pushed inwardly to the extreme position thereof, it being always insured that the centre of the film is exactly vertically aligned with the radiogenic focus, that is, in the longitudinal median plane of the table, it being understood that the film is always fully inserted between the two intensifying screens and longitudinally centered relative to the latter.

It will be observed that the stack E of the film and screens assemblies form with the plate 32 and the two pivoted levers 34 and 36 an assemblage which can be removed in one unit from the cassette drawer by unscrewing and withdrawing the screws 51 and the nuts 35 which secure the feet 33 to the bottom 26. This permits an easy replacement of the screens when they are worn or damaged.

In a modification, the fork-shaped member 100 can be in the form of a single branch. The single branch can occupy, as desired, the situation of one or the other branch of the fork-shaped member and is slidably mounted on the end 56 of the actuating arm 52 and adjusted in position owing to the provision of a clamping screw.

In another modification, the block 72 is slidably mounted on the bottom of the drawer and it carries two cylindrical rods which replace the screwthreaded rod 74 and extend through the block, these rods extending in the same direction as the rod 74. This block can then be shifted manually and fixed in position by means of a lateral clamping screw clamping one of the cylindrical rods.

FIGS. 6-10 show a number of variants of the stack of film and screens assemblies. In FIG. 6 the strips 42a, 43a of the mounts extend along the entire width of the members 46 so that the width of these strips varies from one assembly to the next.

In FIG. 7 the mount 40 for the film and screens assemblies is constituted by an extension of the intensifying screens 38, 39, which are of metal, the pins 49 and 48 being rivetted to the corresponding extensions of the screens.

In the variant shown in FIG. 8, the intensifying screens are also extended so as to be coplanar with the outer face of the guide bars 47 and a single metal fixing strip 125 is provided on the upper intensifying screen 39 of each assembly, this strip having a width which is just sufficient to receive the rivetted end of the pins 49.

In FIGS. 9 and 10, the member 46 has two recesses 126 in which the corresponding edges of the screens 38, 39 are fitted, these recesses being stuck to the surface of the screens either directly on the fluorescent substance f (FIG. 10) or after this substance has been removed from the support S of the screen which is laid bare (FIG. 9).

FIG. 11 shows a manner of actuating the film and screens assemblies which differs from that shown in FIGS. 2 and 3. In this embodiment the mount 40 of each assembly comprises a single pin 49a which is disposed in the middle of the mount, and the rear end 54 of the actuating arm has an axial slot 54a in which are directly engaged the respective pins 49a of the mounts 40. In this arrangement no film and screens assembly is fixed to the cassette and the lower assembly is merely guided in contact with the edge of the plate 32. The pin 53 is, moreover, a simple pivot pin for the actuating arm. It is also possible to provide for the pivot pin 53 of the actuating arm an arrangement identical to that shown in FIG. 2, in which case the actuating arm is pivoted by means of a pin to the middle of the mount of the upper assembly,

the connections with the other mounts being as shown in FIG. 12.

Although specific embodiments of the invention have been described, many modifications and changes may be made therein without departing from the scope of the invention as defined in the appended claims.

Thus in FIGS. 2 and 3 the bar 47 of the upper film and screens assembly can fulfill the function of the link 50, in which case the pins 50 coincide with the pins 49 of this assembly, the pivotal connection 57 being then common to the end 54 of the arm 52 and the bar 47 of said upper assembly.

The actuating arm 52, instead of co-operating with the fixed abutment 65 of the radiologic table, could be actuated by the moving column carrying the lamp of the tomographic unit. In this case, the actuating arm 52 would extend out of the cassette through the rear wall of the latter in passing between the plate 32 and the bottom 26 of the cassette.

To initiate the emission of the X-rays, the part of the actuating arm 52 which extends out of the cassette could be utilized in combination with a switch for example provided on the radiologic table.

Instead of opening in the manner of a book for introducing or withdrawing the film, the screens could be united along their two longitudinal edges by two mounts which are substituted for the single mount described hereinbefore. In this case the film would be introduced or withdrawn in a transverse end opening and the second mount would be combined with a second actuating mechanism and a fixed abutment 65 which are symmetrical, relative to the longitudinal median plane of the table, to those shown in FIG. 2.

Although the illustrated unit concerns horizontal tomographic operations the cassette drawer could be applied without restriction to vertical tomography. In this case the Bucky diaphragm should be balanced.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. Device for the simultaneous tomography of a body supported on a table of a radiographic unit, the device being adapted to be supported by a case which is movable longitudinally of the table on the side of the table opposed to said body by an X-ray source movable longitudinally of the table so that the case moves in unison with but in the opposite direction to the X-ray source, the device having a longitudinal axis adapted to extend longitudinally of the table and containing in combination: a support, a stack of adjoining relatively movable thin assemblies, each assembly comprising a radiation-sensitive film and two intensifying screens, one of said intensifying screens disposed on each side of the film, guide means associated with the assemblies for guiding the assemblies so that they are movable relative to each other in a plurality of parallel planes in a direction parallel with said longitudinal axis, and an actuating mechanism comprising an arm mounted to pivot relative to the support about an axis substantially perpendicular to said planes from one side to the other of a first plane perpendicular to said longitudinal axis and engaging portions of the assemblies at points on the arm which are at respectively increasing distances from the pivotal mounting of the arm from one assembly to the next adjacent assembly, whereby pivotal movement of the arms from one side of the other of said first plane shifts the assemblies in said planes and in said direction to different extents, the actuating mechanism further comprising a first member which co-operates with said arm, is movable relative to the device from one side to the other of a second plane perpendicular to said longitudinal axis and adapted to co-operate with and be movable by a second member rigid with the table when the case and the device supported thereby move longitudinally of the table and means interconnecting the arm and the first member so that movement of the first member from one side to the other of said second plane causes movement of the

arm from one side to the other of said first plane, whereby the films of the assemblies have formed thereon in operation of the radiographic unit images of different planes of said body, which planes depend on said distances.

2. Device for the simultaneous tomography of a body supported on a table of a radiographic unit, the device being adapted to be supported by a case which is movable longitudinally of the table on the side of the table opposed to said body by an X-ray source movable longitudinally of the table so that the case moves in unison with but in the opposite direction to the X-ray source, said device having a longitudinal axis adapted to extend longitudinally of the table and comprising in combination: a support, a stack of closely adjacent relatively movable thin assemblies, the stack of assemblies having an end assembly adjoining the support, means maintaining said end assembly stationary relative to the support, each assembly comprising an X-ray sensitive film and two intensifying screens, one of said screens being disposed on each side of the film, guide means associated with the assemblies for guiding the assemblies so that they are movable relative to each other in a plurality of parallel planes in a direction parallel with said longitudinal axis, an actuating mechanism for shifting the assemblies in said planes, the actuating mechanism comprising an arm mounted on the support to pivot about a pivot axis substantially perpendicular to said planes, the arm having pin-engaging means, each assembly except for said end assembly including a pin engaging with the pin-engaging means of the arm at a distance from said pivot axis, the pins being engaged with the pin-engaging means at increasing distances from said pivot axis from the pin of the assembly of the stack which is immediately adjacent said end assembly to the pin of an end assembly of the stack which is remote from said end assembly adjoining the support, and arm-pivoting means operatively connected to the arm and movable relative to the support to co-operate with and be movable by a member associated with said unit when the case and said support move longitudinally of the table, whereby in operation of the radiographic unit the arm pivots about said pivot axis and shifts the assemblies different distances in a direction parallel with said longitudinal axis.

3. Device as claimed in claim 2, wherein the pin-engaging means is constituted by a slot in the arm into which the pins are slidably engaged, each assembly comprises a mount interconnecting the corresponding two intensifying screens, the overall thickness of each assembly being substantially 1 mm. and the assemblies being in contact with each other so that the films lie very nearly in a common plane, said guide means comprising portions on said mounts which slidably engage each other so as to be relatively slidable in a direction parallel with said longitudinal axis.

4. Device for the simultaneous tomography of a body supported on a table of a radiographic unit, the device being adapted to be supported by a case which is movable longitudinally of the table on the side of the table opposed to said body by an X-ray source movable longitudinally of the table so that the case moves in unison with but in the opposite direction to the X-ray source, said device having a longitudinal axis adapted to extend longitudinally of the table and comprising in combination: a support, a stack of closely adjacent relatively movable thin assemblies carried by the support, each assembly comprising an X-ray sensitive film and two intensifying screens, one of said screens being disposed on each side of the film, guiding and locating means associated with the assemblies and the support for guiding the assemblies so that they are movable relative to each other in a plurality of parallel planes in a single direction parallel with said longitudinal axis, two parallel arms mounted on the support in spaced relation to each other to pivot about pivot axes substantially perpendicular to said planes, a link pivotally interconnecting the arms so that the arms

and link constitute an articulated deformable parallelogram structure, an elongated slot in each arm, each of said assemblies having two pins respectively engaged in the slots of the two arms, the pins being engaged in the slots at decreasing distances from the pivot axis of the corresponding arm from the pin of the first assembly of the stack of assemblies to the pin of the last assembly of the stack, a third arm mounted to be pivotable relative to the support about a first pivot pin, a second pivot pin pivotally connecting the third arm to the link, the third arm being extended beyond the first pivot pin and being adapted to engage a member associated with said table when the case and the support move relative to the table whereby in operation of the unit the assemblies are shifted through dissimilar distances relative to the table.

5. Device as claimed in claim 4, further comprising a block adjustably mounted on the support for adjustment in a direction substantially perpendicular to said longitudinal axis, the first pivot pin being mounted on the block and movable in an elongated slot extending longitudinally in the third arm, whereby the angular movement of the two parallel arms can be varied for a given movement of the case and support relative to the table.

6. Device as claimed in claim 5, further comprising a graduated scale mounted on the support and a pointer mounted on the block, the graduations of the scale corresponding to the distance between the X-ray source and the basic tomographic section through said body.

7. Device for the simultaneous tomography of a body supported on a table of a radiographic unit, the device being adapted to be supported by a case which is movable longitudinally of the table on the side of the table opposed to said body by an X-ray source movable longitudinally of the table so that the case moves in unison with but in the opposite direction to the X-ray source, said device having a longitudinal axis adapted to extend longitudinally of the table and comprising in combina-

tion: a support, a stack of closely adjacent relatively movable thin assemblies carried by the support, each assembly comprising an X-ray sensitive film and two intensifying screens, one of said screens being disposed on each side of the film, guide means associated with the assemblies for guiding the assemblies so that they are movable relative to each other in a plurality of parallel planes in a direction parallel with said longitudinal axis, an arm mounted on the support to pivot about a pivot axis substantially perpendicular to said planes, a slot in the arm, each of said assemblies having a pin engaging the slot in the arm, the pins being at increasing distances from said pivot axis of the arm from the pin of the first assembly to the pin of the last assembly of said stack, said arm having a portion extending for engagement with a member which is associated with said unit and stationary relative to said table, whereby when the case moves longitudinally of the table in operation of the radiographic unit the arm pivots and shifts the assemblies different distances in a direction parallel to said longitudinal axis.

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