Aug. 5, 1969 H. WALISCHMILLER 3,459,939

RADIATION THERAPY OPERATING TABLE WITH MOVABLE HALF SECTIONS

Filed Oct. 3, 1967 3 Sheets-Sheet 1

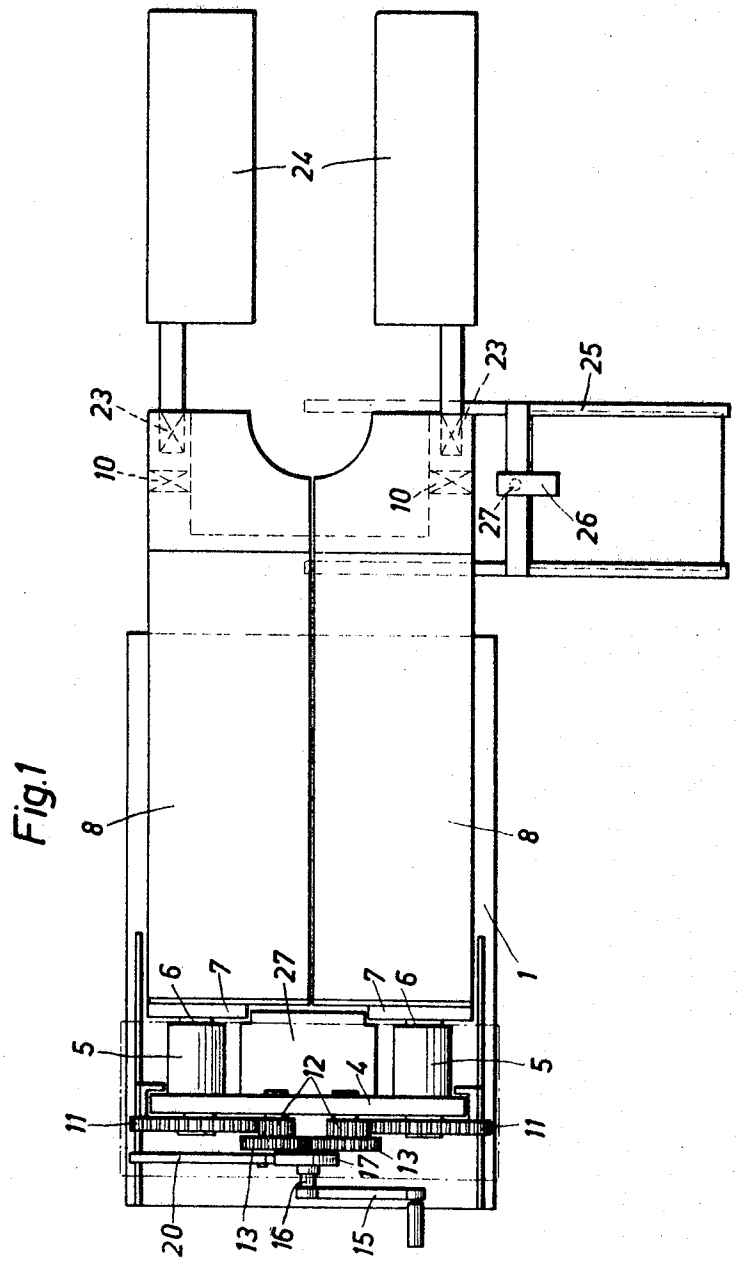


Fig.1

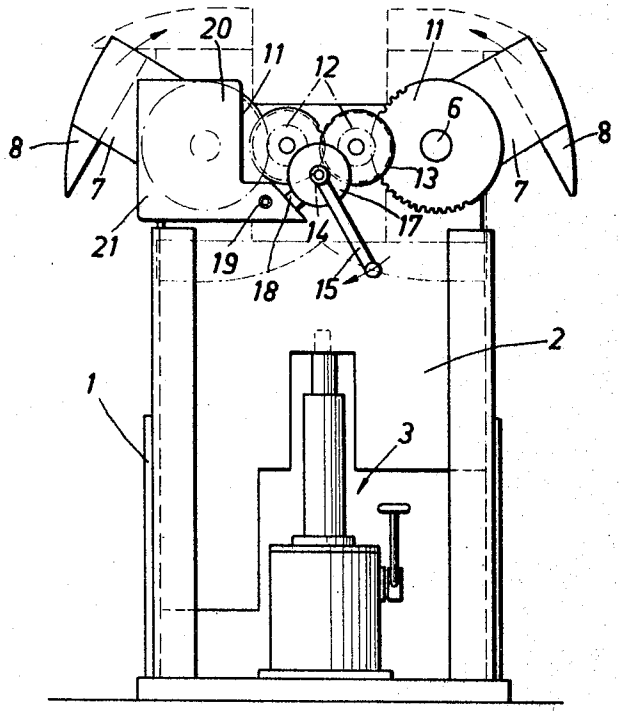
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Fig.2



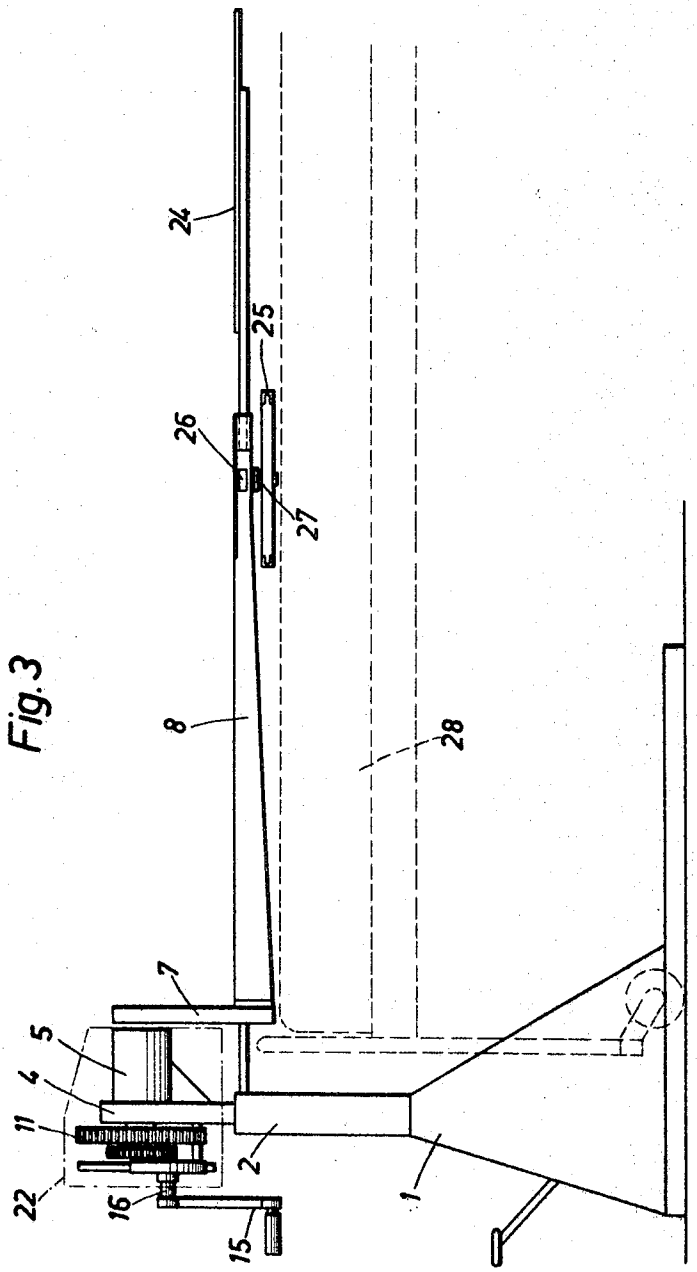
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Fig. 3



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RADIATION THERAPY OPERATING TABLE WITH MOVABLE HALF SECTIONS

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Int. Cl. G01n 23/00
U.S. Cl. 250—54 6 Claims

ABSTRACT OF THE DISCLOSURE

An operating table, particularly for radiation therapy which comprises a frame, and an end plate guided along the frame. A table is divided along its central longitudinal axis to form two table halves supported by the end plate. Means for moving the two table halves in crosswise direction are arranged in order to move laterally the table halves and to move a patient to a rollable support disposed below the table halves.

The present invention relates to an operating table, particularly for the application of radiation therapy.

In all chirurgical treatments, particularly in such, in which operative steps have to be performed, as it is well known, care has to be taken that the patient can be brought into a transportable bed or rollable stretcher very carefully from the operating table. This is of importance, in particular, during an inner application of the radiation therapy, which radiation source, for instance, radium, is inserted into the body cavity to be subjected to radiation. It is, thereby, of greatest importance that the inserted applicator does not change any more its position, because the effect of the radium must be exactly localized, in order to avoid damage of any healthy tissues.

In the known operation-and treatment-tables the patient is either lifted after the treatment from the table and is transported into his or her bed or one lets the patient slide by lateral edging of the table into the bed disposed adjacent thereto. These methods are cumbersome in performance, and furthermore they require also the greatest care and the cooperation of several persons, if additional damages should be avoided.

It is one object of the present invention to provide an operating table, particularly for radiation therapy, wherein an appreciable reduction of these difficulties result in connection with an operating table of the mentioned type, such that the table is divided at its central longiutdinal axis and the two halves are movable in crosswise direction such, that the support below the patient can be moved away laterally until the patient slides onto a supportable, preferably rollable stretcher, slidable below the table. In an advantageous manner also each of the two table halves is swingable about a longitudinal rotating axis disposed above the table plane.

By means of such a table structure, it has been made possible to dimension the radius of the swinging arc such, that the patient can be lowered slowly and carefully to the bed disposed below the treating table and can be laid down by lateral swinging out of the two table halves onto the bed. Since during lateral swinging out of the table halves move simultaneously upwardly, the transportable bed can be set or positioned directly below the hight-adjustable table, so that the lowering of the patient can be performed over a small height and thus without danger, as well as comparatively fast. It is thereby essential, also, that the described shifting into the bed can be performed by a single operator and from a place which is protected against radiation.

For the performance of the swinging movement an endwise disposed lever system could be provided. This means would, however, require a large structural and spacial investment by the plurality of the required links and due to the great load. Furthermore, a particular structure would be required for the links, in order to avoid the danger of loosening by wear.

It is, therefore, still another object of the persent invention to provide an operating table, particularly for radiation therapy, wherein an end-side disposed tooth-gear drive including a speed reducer for the production of the swinging movement is provided, which gear drive is self-locking and makes possible the swinging of the table halves for at least 180°.

This simple, highly loadable and non-sensitive drive permits to swing the table halves into an upper horizontal position disposed above the patient, so that the patient after the transfer is again accessible from all sides. The production of X-ray pictures is made possible in suitable manner such, that holding means for casettes for X-ray films are provided below the free end of the table halves, whereby within this range the table consists of a material passable by X-rays. The frame of the casettes is designed such, thereby, that for its attachment rectangularly profiled insertion openings for the leg supports are applicable. Furthermore, the holding frame is equipped with a rotary bolt, so that two casettes swingable about 180° can be provided.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 is a top plan view of an operating table designed in accordance with the present invention;

FIG. 2 is an end view thereof; and

FIG. 3 is a side elevation of the operating table.

Referring now to the drawings, the operating table comprises a preferably heavy frame **1** along which an end plate **2** is vertically guided, and is adjustable as to its height by means of a hydraulic unit **3**. Two bearing bodies **5** are secured to the upper part **4** of the end plate **2**, in which bearing bodies **5** are mounted the shafts **6** for swinging levers **7**. The cantilevered table halves **8** are secured to the swinging levers **7** and insert openings **10** for leg supports (not shown) are disposed at the other ends of the table halves **8**.

The swinging levers **7** are connected by means of the shafts **6** for joint rotation with gears **11**, which can be driven by means of intermediate gears **12** and **13** transmitting at reduced speed the drive from the drive gear **14** by means of a hand-crank **15**. For the self-locking of the drive a brake disc **17** is provided on the shaft **16** of the drive gear **14**, on which brake disc **17** is engaged a braking block **18**. The latter is secured to a two-armed braking lever **20** rotatable about the axle **19**, and is pressed continuously to the brake disc **17** by means of a heavy lever part **21**. The drive **11**, **12**, **13** and **14** is covered by a protecting box **22** (FIG. 3).

At their free end the table halves **8** are equipped at the end side with rectangularly profiled insertion openings **23** which serve as holding means for auxiliary leg supports and resting means **24**, respectively. These auxiliary leg supports are used upon removal of the actual leg supports.

The insertion openings **10**, which are free in this case, are provided for the securing of a casette frame **25** for X-ray pictures, whereby the holding member **26** is insertable into the opening **10**. This part is equipped with an axle **27**, which makes possible the swinging of the frame **25** about an angle of 180°, so that a double casette is applicable.

The described operating table is handled in such manner that at first the patient is set on the table halves **8** which are disposed in their closed position, which table halves **8** are fixed by the abutment plate **27'**. The auxiliary supports **24** are removed thereby, so that the patient is accessible for treatment from all sides, whereby the table can be raised or lowered into a suitable and required height by the hydraulic lifting unit **3**.

After the treatment the auxiliary supports **24** are inserted for the leg supports and for the leg rests and the leg supports are removed. Thereafter the bed **28** or a stretcher, can be moved below the table, whereupon the table is lowered to the least possible height difference from the bed. Thereafter, by operation of the crank **15** the table halves **8** are swung upwardly in the manner shown in FIG. 2 into a dotted line position. During this shifting the patient is lowered without changing the body position to the bed or stretcher **28** and can then, under circumstances, upon lifting of the table, be rolled away.

As the known operating tables, the described table can be provided with a drive about the longitudinal and crosswise disposed axis swingable on the end plate **2** which is suitable for some treatments.

While I have disclosed one embodiment of the present invention it is to be understood that this embodiment is given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. An operating table, particularly for radiation therapy comprising

a frame,

an end plate guided along said frame,

a table divided along its central longitudinal axis to form two table halves supported by said end plate, and

means for moving said two table halves in a direction away from each other whereby an opening between said table halves is created in order to move a patient through said opening to a rollable support disposed below said table halves.

2. The operating table, as set forth in claim **1**, which includes

an axle for each of said table halves and disposed longitudinally and above the plane of said table, and

each of said table halves is swingably mounted on the corresponding one of said axles.

3. The operating table, as set forth in claim **2**, which includes

a self-locking gear drive disposed at one end side of said table and having a reduction gear, said gear drive permitting a swinging movement of said table halves for at least 180°.

4. The operating table, as set forth in claim **1**, which includes

holder means disposed below the free ends of said cantilevered table halves and adapted to receive casettes for X-ray films, and

said table is at least within the range of said holder means of a material permitting passage of X-rays.

5. The operating table, as set forth in claim **4**, which includes

a frame for said casettes having a holding member, and

said holding member has rectangularly profiled insertion openings to receive leg supports.

6. The operating table, as set forth in claim **5**, which includes

auxiliary supports extending the length of said table halves, and secured to the latter upon removal of said leg supports.

References Cited

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RALPH G. NILSON, Primary Examiner

S. C. SHEAR, Assistant Examiner

U.S. Cl. X.R.

269—322

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,459,939 August 5, 196

Hans Walischmiller

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

In the heading to the printed specification between lines 6 and 7, insert -- Claims priority, application Germany, Oct. 5, 1966, W 42,524 --.

Signed and sealed this 21st day of April 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, J
Commissioner of Paten