Sept. 13, 1932. F. G. STEINER 1,877,610

CONTINUOUS SHEET APPLIANCE FOR EXAMINATION AND OPERATING TABLES

Filed Jan. 15, 1931 2 Sheets-Sheet 1

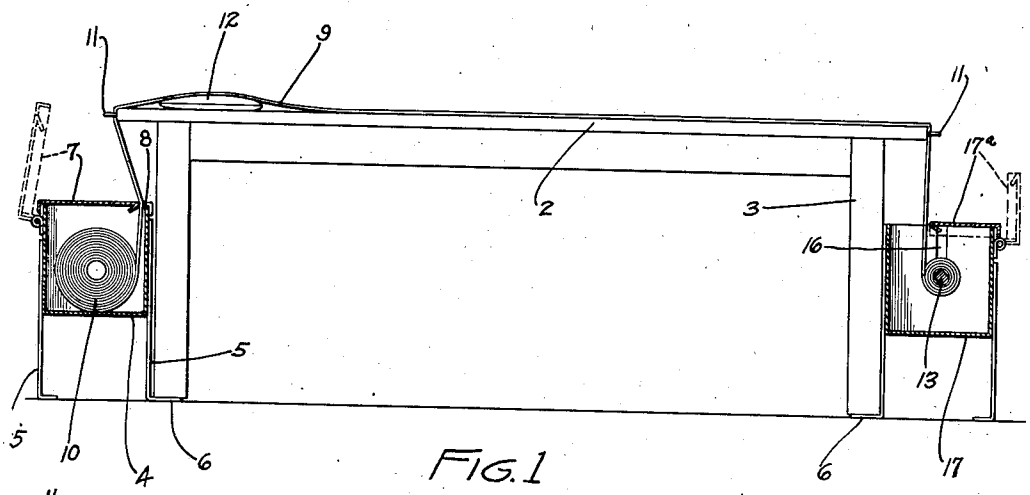


FIG. 1

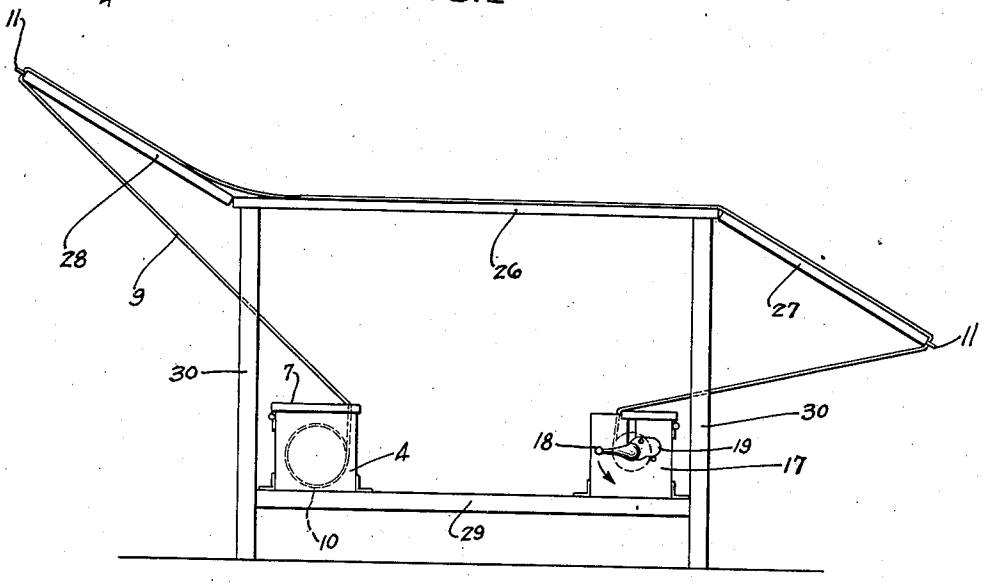


FIG. 2

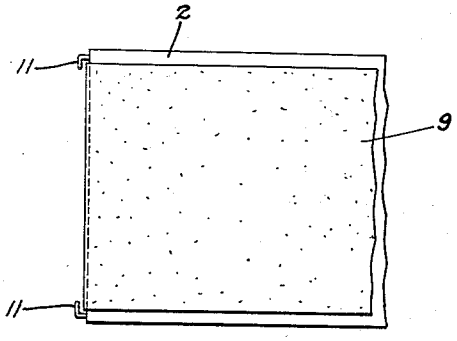


FIG. 3

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CONTINUOUS SHEET APPLIANCE FOR EXAMINATION AND OPERATING TABLES

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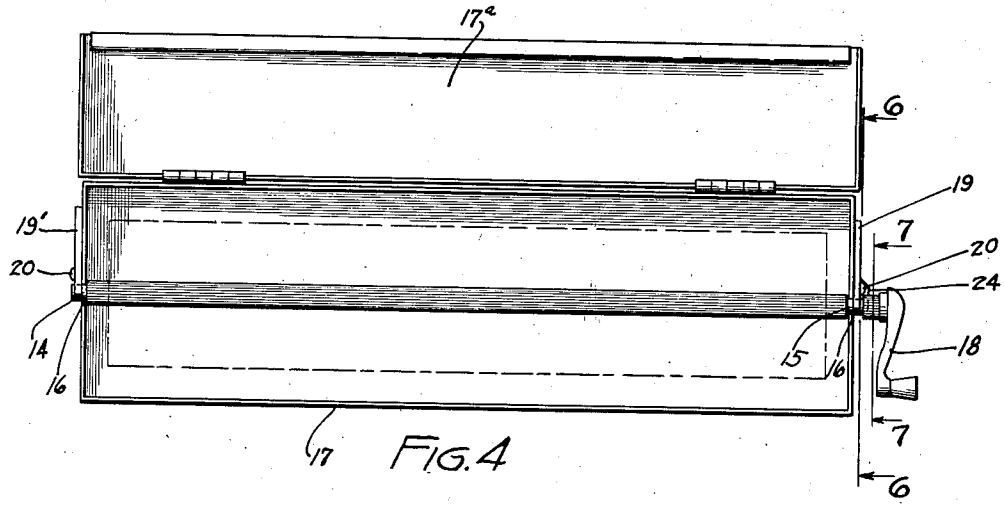


FIG. 4

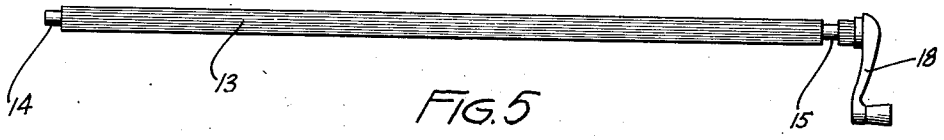


FIG. 5

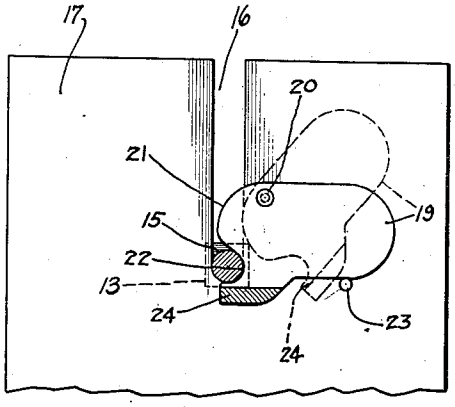


FIG. 6

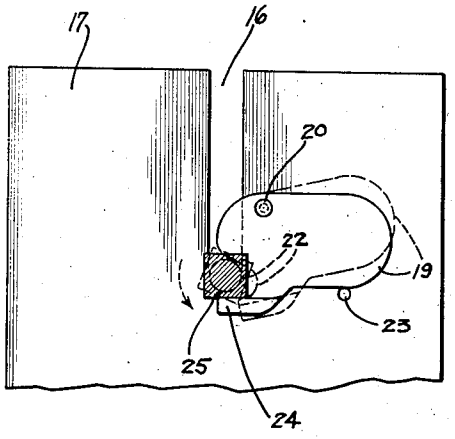


FIG. 7

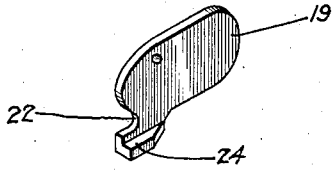


FIG. 8

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1,877,610

UNITED STATES PATENT OFFICE

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CONTINUOUS SHEET APPLIANCE FOR EXAMINATION AND OPERATING TABLES

Application filed January 15, 1931. Serial No. 508,859.

In practically every physician's and surgeon's office, as well as in hospitals, tables and operating chairs will be found whereon patients are required to lie preparatory to a physical examination or operation. It is the practice of the medical profession to place a sheet over the table or operating chair for the patient to lie on and, obviously, this sheet will become soiled at the point where it contacts with the patient's body, or with parts of the clothing and the shoes which usually are not removed in the case of a physical examination. The soiled sheet, for sanitary reasons, is, or should be, removed preparatory to each examination, and the laundering expense, usually around ten cents for each sheet, adds considerably to the overhead of the office. There is also considerable trouble and annoyance incident to the removal of a soiled sheet and the substitution of a clean one therefor. Usually an ordinary bed sheet is used for this purpose of sufficient length to cover the table or chair, and a physician or surgeon having a large practice must necessarily keep a considerable supply of clean sheets on hand ready for use.

The object of my invention, therefore, is to provide a continuous sheet supply and means whereby the soiled area that has been in contact with the naked body of the patient or the clothes or shoes can be easily and quickly withdrawn from the top of the table or chair and a clean section substituted therefor. Generally in a physical examination, the patient will remove the clothes from the upper portion of the body and lie on the back, and the portion of the sheet in contact with the back of the patient will become soiled and the same will be true of the portion of the sheet at the other end of the table that contacts with the shoes; hence, in shifting the sheet, the portion that is soiled by contact with the shoes is drawn off the table and the part that is soiled through contact with the back of the patient is drawn down to a point where it will contact with the shoes of the next patient and thus with each patient a clean section is provided for contact with the body, and all danger of infection of a patient through contact with a sheet that may have been used by several persons is avoided.

Furthermore with this appliance, the sheet is held securely in place. There is no danger of its slipping out of position when the patient climbs on the table to lie thereon or in the case of the operating chair when a section is tilted for the convenience of the surgeon. It has been found especially difficult in such a case to hold a loose sheet in place on an operating table on account of the movable leaves or sections, but with the continuous sheet this difficulty is entirely eliminated.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the drawings, forming a part of this specification,

Figure 1 is a side elevation of an examination table with my improved continuous sheet appliance thereon. The boxes at the ends of the table being shown in section.

Figure 2 is a similar view showing the appliance adapted for an operating table having hinged leaves.

Figure 3 is a detail view showing the guides which I prefer to provide at the ends of the tables to hold the sheet in place thereon.

Figure 4 is a plan view of the box or receptacle wherein the soiled sheet is wound.

Figure 5 is a detail view of the shaft on which the soiled sheet is wound and the operating crank therefor.

Figure 6 is a detail view showing the device which permits the shaft to be dropped into the soiled receptacle and automatically locked therein.

Figure 7 is a similar view showing another position of the locking plate or dog.

Figure 8 is a perspective of the plate by means of which the shaft for the soiled portion of the sheet is held in place.

In the drawings, 2 represents the top and 3 the legs of an examination table, such as is usually used in the medical profession. In practice the patient to be examined removes the clothes and lies down on the table and, generally an ordinary bed sheet is interposed between the body and the top of the table.

This sheet soon becomes soiled through contact with the patient's body or the clothes or shoes and the person in charge of the examination should substitute a clean sheet for the soiled one preparatory to each examination. To do this requires a considerable supply of sheets and, as each one cost approximately ten cents for laundering, there is a temptation to continue the successive use of the same sheet, even though it may be partially soiled, and this use is made even more likely because of the time and inconvenience required to remove the soiled sheet and substitute a clean one therefor. To eliminate this objection to the use of an examination table, I provide a box 4 of suitable material having legs 5 adjacent the ends of the table and feet 6 which extend under the table legs and are securely held by the weight of the table. A cover 7 is provided for the top of the box with an opening 8 on the side adjacent the table through which a web of clean sheeting 9 is drawn from a clean roll 10 that is placed loosely in the box 4. This web of sheeting is stretched upwardly against the end of the table top 2 and I prefer to provide guides 11 at each end of the table between which the web of sheeting is stretched and is adapted to slide. The usual pillow 12 is placed under the sheet at one end and the web is carried along over the top of the table and down at the opposite end to a shaft 13 having a reduced portion 14 at one end and an annular groove 15 near the opposite end to allow the shaft to drop into vertical slots 16 provided in a box 17 that is arranged against the legs of the table at the opposite end from the box 4 and provided with supporting legs having feet 6 which extend under the legs of the table and are held thereby. The annular groove 15 allows the shaft 13 to slide freely in the slot 16 at one end of the box, while the walls of this groove engage the side walls of the slot and hold the shaft against longitudinal movement in the box but permit it to be freely revolved. The shaft has a suitable operating crank 18 and when the soiled end of the sheeting is wound on this shaft it may be easily revolved by means of the crank to withdraw the soiled section from the table and expose a clean portion.

The box 17 is preferably provided with a cover 17ª, shown plainly in Figure 1, that is adapted to swing down and close the outer portion of the top of the box. The edge of the cover forms a guide with which the sheeting contacts, as it enters the box so that any wrinkles or folds will be smoothed and straightened out before the winding operation. This cover normally conceals the slot 16 but whenever desired, may be swung to an upright position, as indicated by dotted lines in Figure 1, to allow convenient access to the slots and the interior of the box.

To prevent the winding shaft from moving upwardly in the box during the winding operation, I prefer to provide plates 19 and 19′ pivoted at 20 on the end walls of the box and having rounded edges 21 which project across the slots 16. Below these rounded edges each plate is provided with a recess 22 to receive the shaft end 14 and that portion formed by the annular groove 15. A stop 23 on each end wall of the box normally holds the plates in a suitable horizontal position. When, however, the shaft is dropped into the slots 16 it will engage the curved edges 21 and tilt the plates 19 to the dotted line position shown in Figure 6 and thereupon the shaft may drop to the bottom of the slots 16. The plates 19 will then return by gravity to their normal position as shown in Figure 6. I prefer also to provide a lug 24 on the lower edge of the plate 19 adjacent the recess 22 in position to contact with a shoulder 25 formed on the shaft to prevent turning of the shaft backwardly or in a direction that would tend to loosen the soiled roll of sheeting on the shaft.

In Figure 2, I have shown an operating table 26 equipped with the usual hinged leaves or sections 27 and 28. The box 4 instead of being placed at the end of the table is secured to a suitable shelf 29 between the legs 30, as in this position it will not interfere with the surgeon while operating. The box 17 is also mounted in a similar manner at the other end of the table on the shelf 29.

Where a loose sheet is used on an operating table with the movable leaves, it is difficult, if not practically impossible to keep the sheet in place. The adjustment of the leaves tends to disarrange it and then it is almost surely pulled out of place by the patient in climbing on and off the table. With my improvement, the attendant can easily and quickly draw the sheet taut over the table when the leaves have been adjusted and as the continuous sheet is firmly held there will be no possibility of its being displaced on the table top.

A sheet of any suitable length may be provided, preferably fifty yards, and rolled into a compact, tight bundle as it comes off the flat work ironer. When received by the physician or surgeon the roll will be dropped into the box at the head of the table and the web stretched over the table down to the shaft in the box at the other end. A few turns of the shaft will draw the sheet tightly over the table from the head to the foot and it will thus be firmly held and there will be no possibility of its becoming displaced or sliding off the table when the patient climbs on or off. In a physical examination the patient usually lies on the back, partially disrobed, and the sheet soon becomes soiled from contact with the body, as well as from the rubbing of the clothing and the shoes on the sheet while the patient is lying on the table. After the examination of each patient, or at any other time, the person in charge of the chair

can easily and quickly withdraw the soiled portion from the upper part of the table or the point where it would be apt to contact with the body of another patient, and either draw it off the foot of the table or adjust it at a point where only the shoes or clothing would come in contact with the soiled portion, while a clean area will be presented at the head or opposite end of the table. In this way the physician or surgeon can easily and quickly prepare the examination or operating table for each successive patient without the necessity of removing the sheet or securing it thereon to prevent displacement through the movements of the patient.

The lug on the plate 19 has a ratchet effect and prevents backward movement of the shaft and the consequent loosening of the sheet on the roll.

It will be understood that means is provided in connection with the operating table whereby the leaves 27 and 28 can be conveniently adjusted and held in their adjusted position. Such devices, however, are common to operating tables and I have not thought it necessary to illustrate them in connection with the leaves of the table shown, it being understood that any suitable mechanism may be provided for such adjustment.

In various ways the details of construction and combination shown and described may be modified and still be within the scope of my invention.

I claim as my invention:

1. The combination with a table, of a receptacle adapted to receive a roll of sheeting and having an opening through which the web of sheeting may be stretched to extend over the table from end to end, a second receptacle having opposite vertical slots in its end walls, a winding shaft adapted to drop into said slots and on which the web of sheeting may be wound, and releasable means associated with said second receptacle whereby said shaft may be inserted in said slots and automatically locked therein against premature displacement.

2. The combination with a table and a support for a roll of clean sheeting, the web of which may be stretched from said support over said table, of a receptacle having vertical slots in its end walls, a winding shaft adapted to drop into said slots and whereon the web of sheeting may be wound, plates pivoted on said end walls and having curved edges normally extending across said slots to be engaged by said shaft, said plates also having recesses below said curved edges to receive said shaft, said plates having freedom of tilting in one direction through the engagement of said shaft with said curved edges to allow said shaft to enter said recesses, and stops adapted to prevent movement of said plates in the opposite direction, whereby premature upward movement of said shaft in said slots will be prevented.

3. The combination with a table over which a web of sheeting may be stretched, of a receptacle at one end of said table provided with vertical slots in its end walls, plates pivoted on said end walls and normally extending across said slots to be actuated by the downward movement of said shaft therein, said plates having recesses to receive said shaft at the limit of its downward movement, the pivots of said plates being so positioned with respect to said slots that said shaft will be prevented from premature upward movement in said slots.

4. The combination with a table over which a web of sheeting may be drawn, of a receptacle adjacent one end of said table, a shaft vertically movable in guides in the walls of said receptacle and whereon the web of sheeting may be wound, plates pivoted on the walls of said receptacle and having means for normally locking said shaft in its winding position in said guides, one of said plates having a lug thereon and said shaft having a shoulder to engage said lug whereby backward movement of said shaft in said receptacle is prevented.

5. The combination with a table including a support in its lower part and having leaves at each end pivoted thereto for vertical adjustment, of a receptacle mounted on one end of the support inside of the movement of the leaf at that end of the table and adapted to receive a roll of sheeting, the web of which may be stretched outwardly and upwardly over the free end of the adjacent leaf and thence over the table around the free end of the other leaf, each leaf having suitable guides for the web, a second receptacle mounted on the other end of the support inside of the movement of the leaf at the corresponding end of the table and adapted to receive the soiled sheeting, said second receptacle having opposite vertical slots in its end walls, a winding shaft adapted to drop into said slots and on which the web of sheeting may be wound to be drawn taut over the table and the ends of the adjusted leaves, and releasable means associated with the second receptacle whereby said shaft may be inserted in said slots and automatically locked therein against premature displacement.

In witness whereof, I have hereunto set my hand this 9th day of January, 1931.

FRANK G. STEINER.