

Nov. 13, 1962

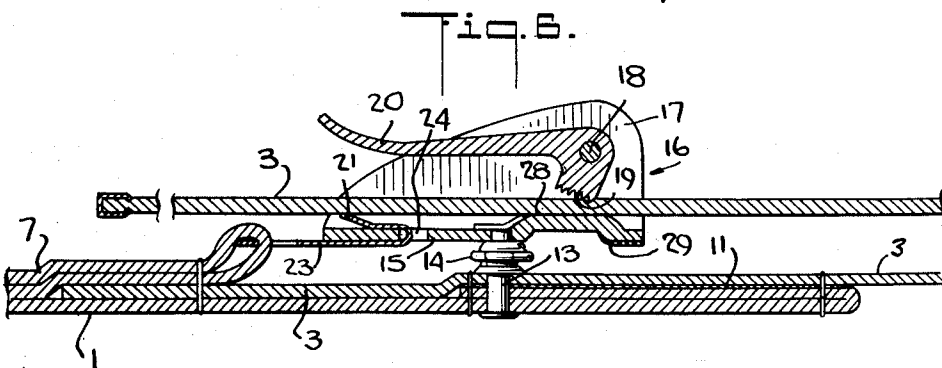
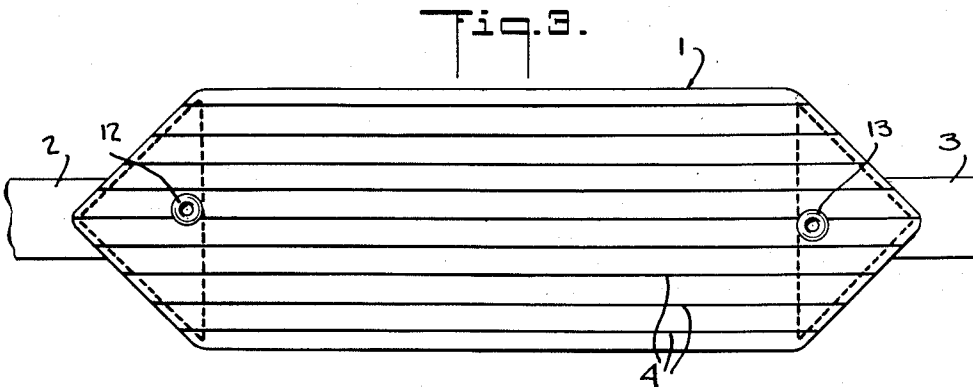
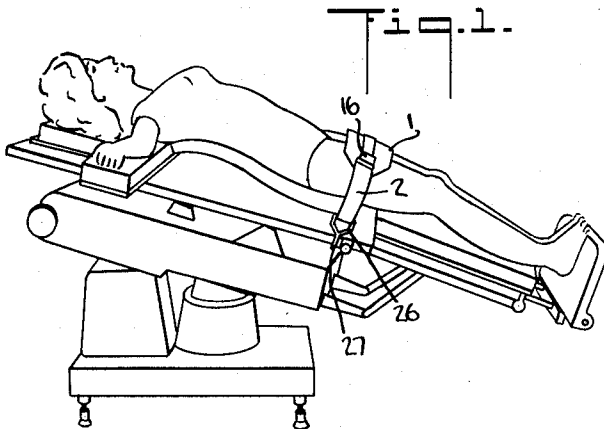
H. R. KIRSTEN

3,063,447

RESTRAINING STRAPS FOR OPERATING TABLES

Filed March 8, 1961

3 Sheets-Sheet 1



INVENTOR.
HUGO R. KIRSTEN
BY *Gustav Drans*
his ATTORNEY

Nov. 13, 1962

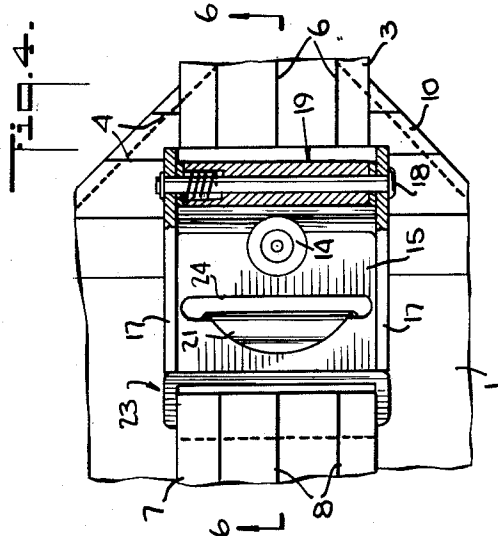
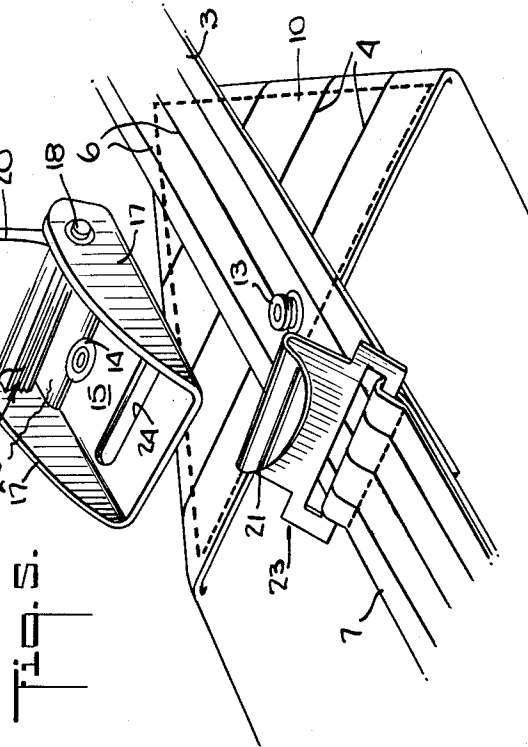
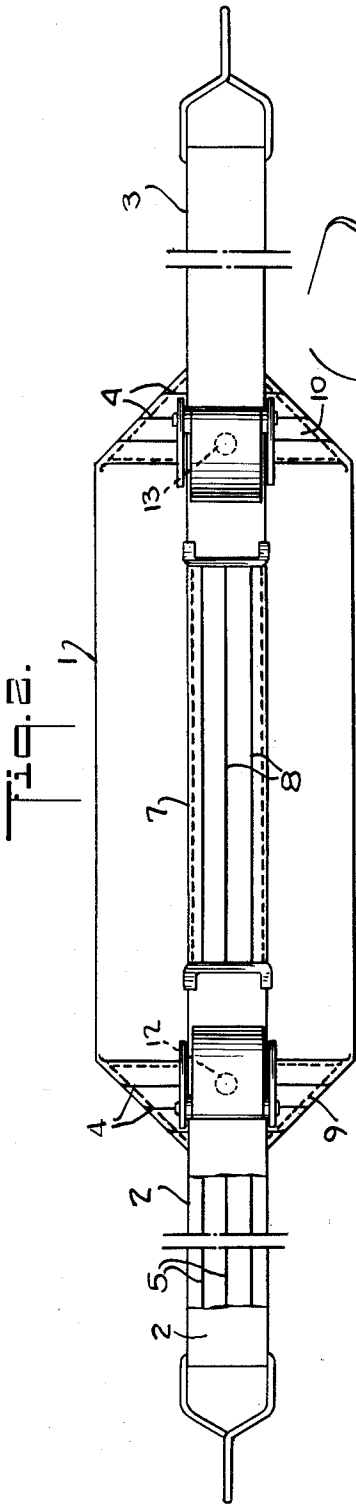
H. R. KIRSTEN

3,063,447

RESTRAINING STRAPS FOR OPERATING TABLES

Filed March 8, 1961

3 Sheets-Sheet 2



INVENTOR.
HUGO R. KIRSTEN
BY *Gustav Drews*
his ATTORNEY

Nov. 13, 1962

H. R. KIRSTEN

3,063,447

RESTRAINING STRAPS FOR OPERATING TABLES

Filed March 8, 1961

3 Sheets-Sheet 3

Fig. 8.

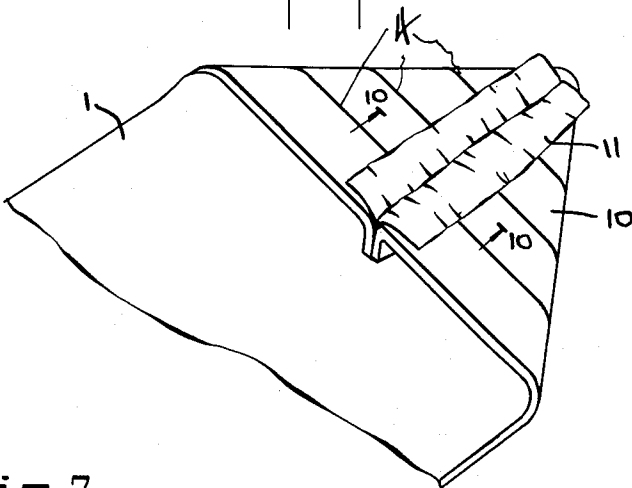


Fig. 7.

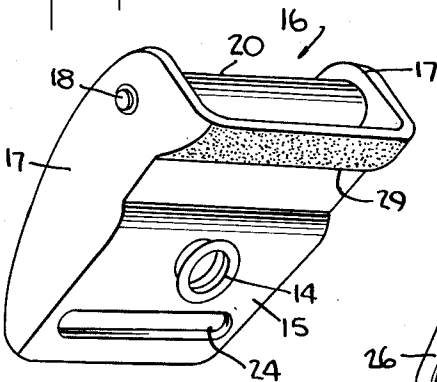


Fig. 9.

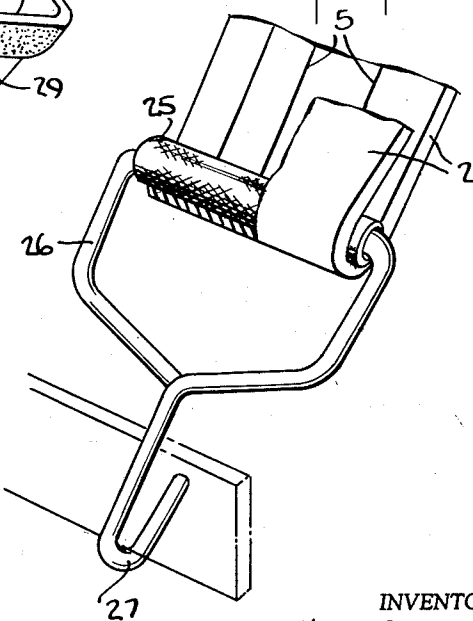
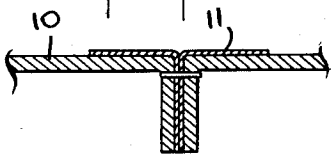


Fig. 10.



INVENTOR
HUGO R. KIRSTEN
BY *Gustav Drane*
his ATTORNEY

1

3,063,447

RESTRAINING STRAPS FOR OPERATING TABLES

Hugo R. Kirsten, 719 Wythe Ave., Brooklyn, N.Y.

Filed Mar. 8, 1961, Ser. No. 94,248

5 Claims. (Cl. 128—134)

This invention relates to restraining straps for operating tables and the like.

Among the objects of the present invention it is aimed to provide an improved restraining strap for an operating table which will not only effectively anchor a restless or obstreperous patient on an operating table but also positively ground all static electricity in turn to eliminate the formation of sparks and the accompanying hazards not only if free oxygen were being administered to the patient, but also should any of the anesthetics being used be inflammable or explosive when subjected to a spark.

More specifically it is an object of the present invention to provide a restraining strap which will have electric conductive strands on the face of the strap in engagement with the body of the patient and in turn in engagement with the frame of the operating table which is grounded to the floor in the conventional way, while the face of the strap in engagement with the anchoring clamps, is free of the electric conductive strands and thus eliminate the insulation of any of the conductive strands from the ground should they become fractured if it be required that they engage the anchoring clamp.

It is still another object of the present invention to provide an improved anchoring clamp which will be electrically connected to the table through electric conductive strands in one face of the strap but also be electrically connected to the electric conductive strands on the strap in engagement with the body of the patient and which clamp in clamping arrangement will have its active jaw grip the face of the strap which is free of any electric conductive strands, and in turn which clamp can with facility be removed from the strap so that the strap can be immersed in a washing machine and the washing machine parts be protected from injury during the washing operation from engagement with the clamp.

These and other features, capabilities, and advantages of the invention will appear from one specific embodiment thereof illustrated in the accompanying drawings in which:

FIG. 1 is a perspective showing the device in use.

FIG. 2 is a plan of the upper face of the strap partly broken away.

FIG. 3 is a fragmental bottom plan view of the straps shown in FIG. 2.

FIG. 4 is a fragmental enlarged view showing the clamp in section.

FIG. 5 is an exploded view showing the clamp separated from the strap.

FIG. 6 is a section on the line 6—6 of FIG. 4.

FIG. 7 is a bottom plan view of the clamp.

FIG. 8 is a fragmental perspective of the hook and the rail of the table to which it is to be attached.

FIG. 9 is a fragmental plan view of the end of the strap.

FIG. 10 is a section on the line 10—10 of FIG. 9.

In the embodiment shown the strap consists of a heavy textile material such as Teflon composed of a broad body engaging portion 1 about twenty inches long by six inches wide which in turn is connected to two narrow strips 2 and 3 about two inches wide by about thirty-four inches in length. The broad body engaging portion or strip 1 has at one side thereof, see FIG. 3, a number of parallel electric conductive strands 4 which extend the full length thereof. The strips 2 and 3 have on the outer face thereof the electric conductive strands 5 and 6 respectively. Intermediate the narrow strips 2 and 3 and overlapping

2

the same on the face of the strip 1, mainly free of the electric conductive strands 4 there is provided the narrow strip 7 which is also about two inches in width and has on the outer face, that is the same face as the strips 2 and 3, the electric conductive strands 8. The ends of the broad strip 1 are folded over so that the ends overlap with the electric conductive strands 4 at these ends disposed on the face of the broad strip which is free of the electric conductive strands, see FIG. 9. Beneath the opposing edges of the end portions 9 and 10 of the broad strip 1, see FIGS. 9 and 10, there are provided the aluminum foil strips 11. The aluminum foil strips 11 are in engagement with the several electric conductive strands 4 and in turn connected with metal buttons 12 and 13, FIG. 3. These buttons 12 and 13 in the nature of rivets extend through the overlapping portions of the main strip 1, the aluminum foil strips 11 and the narrow strips 2 and 3. The buttons 12 and 13 in turn have male fastener heads to receive the female fastener heads 14 on the lower plate 15 of the removable clamp 16. The clamp 16 has the side walls 17 in which are journaled the ends of the shaft 18 of the gripping jaw 19. The gripping jaw 19 in turn has fixed to it the handle 20 for raising it out of gripping engagement. The jaw 19 is provided with the conventional tension spring for urging the lip or handle 20 down into engagement with the strip 2, 3 against the hook 21 where the serrated portion 22 is in engagement with the strip 2 or 3.

For anchoring the clamps 16 in proper gripping engagement with the strips 2 and 3, the hooks 21 on the clips 23 are provided which pass through the openings 24 in the clamps 16 and then when the clamps are pulled under the hooks 21, the fasteners 14 are in position to be secured to the fastener heads of the buttons 12, 13. The clips 23 on which the hooks 21 are formed are connected to the ends of the intermediate strip 7.

When it is desired to wash these straps, from the interest of protecting the washing machine, should a washing machine be used, the clamps 16 are first removed by freeing the same from the buttons 12, 13 and then freeing the same from the hooks 21.

In the use of these straps, it will be seen that the electric conductive strands 4 will engage the body of the patient and then through the aluminum foil strips 11, any static produced will pass to the buttons 12 and 13 and from the buttons 12 and 13 to the clamps 16, and from the clamps 16 through the electric conductive strands 5, 6 to the rollers 25 of the loops 26 connected to the hooks 27 which in turn are connected to the operating table, which according to convention is grounded to the floor of the room.

From the foregoing it will be seen that the electric conductive strands 5 and 6 of the strips 2 and 3 are not subjected to the wear and tear of the serrated portions 22 of the jaw 19, but that on the other hand the smooth face 28 of the plate 15, FIGS. 5 and 6, alone will engage the electric conductive strands 5 and 6 of the strips 2 and 3 in the interest of extending the life of the electric conductive strands 5 and 6 of the strips 2 and 3.

The material of the strips 1, 2, 3 and 7 is preferably composed of Teflon, a fireproof material, in the interest of protecting the patient.

Excellent results have been achieved when the buttons 12 and 13, and the brackets 23 are composed of brass, and the lips 20 of the clamps composed of aluminum, and the main brackets 16 composed of steel.

Excellent results have also been achieved when the hook portions 25, 26 and 27 are composed of steel.

Preferably the outer faces 29 of the clamps 16 are coated with a nonconductive covering such as a vinyl paint to prevent any stray current passing from the clamps

3

16 through the faces 29 to the electric conductive strands 5 and 6 of the strips 2 and 3.

Excellent results have also been achieved when the electric conductive strands 4 of the main strip 1 and the electric conductive strands 5 and 6 of the narrow strips 2 and 3 are composed of a plastic material such as gold Mylar.

In addition to Teflon, good results have also been produced when the material of the strips 1, 2, 3 and 7 is a fireproof material that will not support combustion and is water repellant such as the silicon plastics.

It is obvious that various changes and modifications may be made to the details of construction without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. In a restraining strap for an electricity grounded operating table, the combination of a main fabric strip having electric conductive strands on the inner face thereof to engage the body of the patient, narrow fabric strips connected to said main fabric strip having electric conductive strands on the outer faces thereof and free of electric conductive strands on the inner faces thereof, electric conductive means connecting the electric conductive strands of said main strip to the electric conductive strands of said narrow strips, metal hooks receiving said narrow strips engaging the electric conductive strands of said narrow strips and securing the strap in electricity grounded position, said hooks allowing the free ends of said narrow strips to fold back upon themselves with the conductive strands of said strips facing one another in such overlapped position, and clamps removably connected to said narrow strips and engaging the inner faces of said narrow strips for anchoring the free ends of said narrow strips in place.

2. The combination as set forth in claim 1 in which said clamps have serrated gripping jaws engaging the inner faces of said narrow strips and smooth gripping jaws engaging the outer faces of said narrow strips.

3. In a restraining strap for an electricity grounded

4

operating table, the combination of a main fabric strip having electric conductive strands on the inner face thereof to engage the body of the patient, narrow fabric strips connected to said main fabric strip having electric conductive strands on the outer faces thereof and free of electric conductive strands on the inner faces thereof, electric conductive means connecting the electric conductive strands of said main strip to the electric conductive strands of said narrow strips, metal hooks receiving said narrow strips engaging the electric conductive strands of said narrow strips and securing the strap in electricity grounded position, said hooks allowing the free ends of said narrow strips to fold back upon themselves with the conductive strands of said strips facing one another in such overlapped position, clamps removably connected to said narrow strips and engaging the inner faces of said narrow strips for anchoring the free ends of said narrow strips in place, and means for connecting said clamps to said strips including hooks on said strips, abutments on said clamps for receiving said hooks, and complementary fastening buttons on said strips and clamps for supplementing said hooks in anchoring said clamps to said hooks.

4. The combination as set forth in claim 3 in which said strips are composed of a fireproof material such as Teflon, and said electric conductive strands are composed of a plastic material such as gold Mylar.

5. The combination as set forth in claim 3 in which said strips are composed of a fireproof material such as silicon plastics.

References Cited in the file of this patent

UNITED STATES PATENTS

1,607,140	Wappler	Nov. 16, 1926
2,225,884	Parks	Dec. 24, 1940
2,363,872	Kiessling	Nov. 28, 1944
2,538,641	Elsner	Jan. 16, 1951
2,826,796	Davis	Mar. 18, 1958