

Dec. 10, 1935.

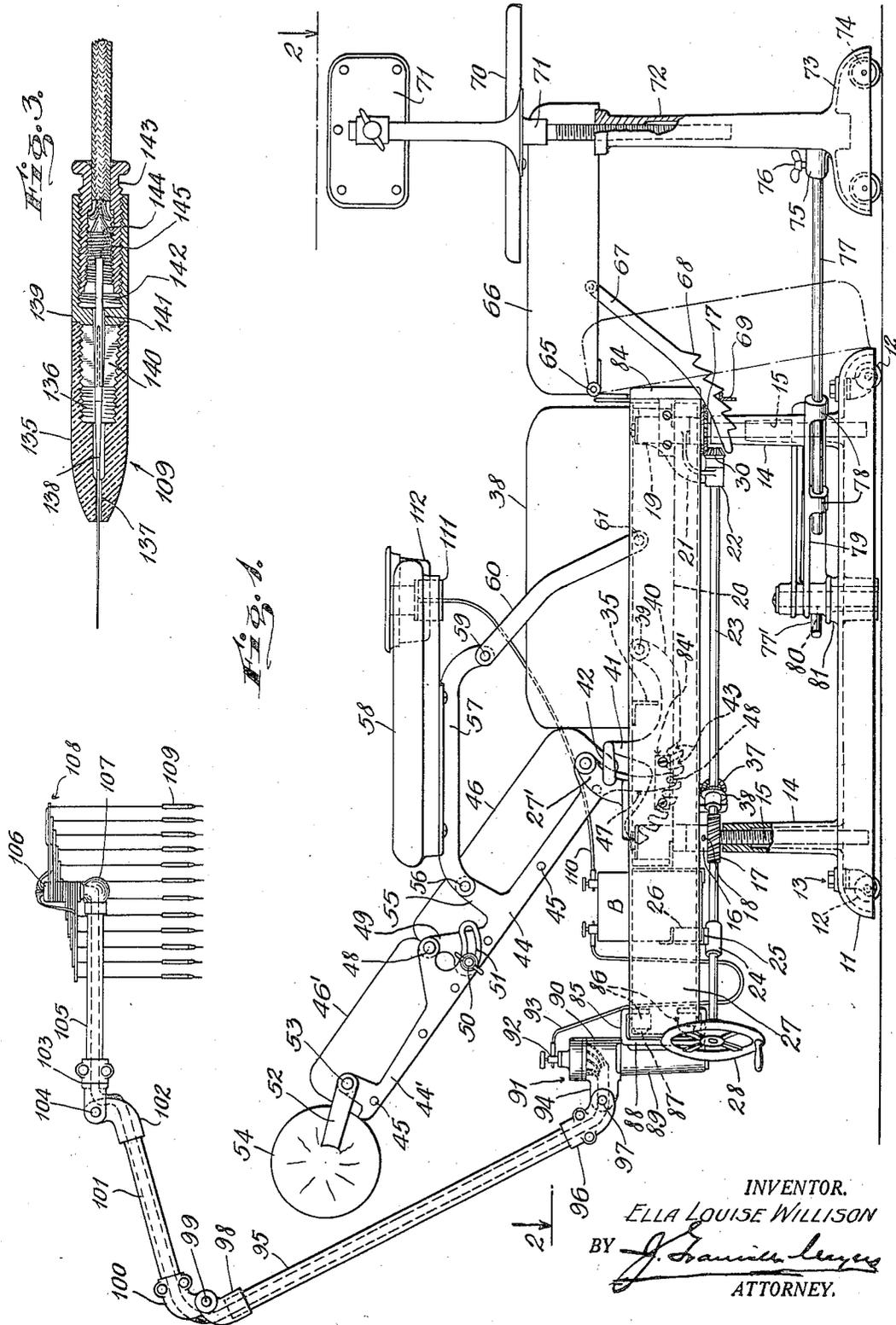
E. L. WILLISON

2,023,563

ELECTROLYSIS APPARATUS

Filed June 21, 1933

5 Sheets-Sheet 1



INVENTOR.
ELLA LOUISE WILLISON
BY *J. Hamilton Lewis*
ATTORNEY.

Dec. 10, 1935.

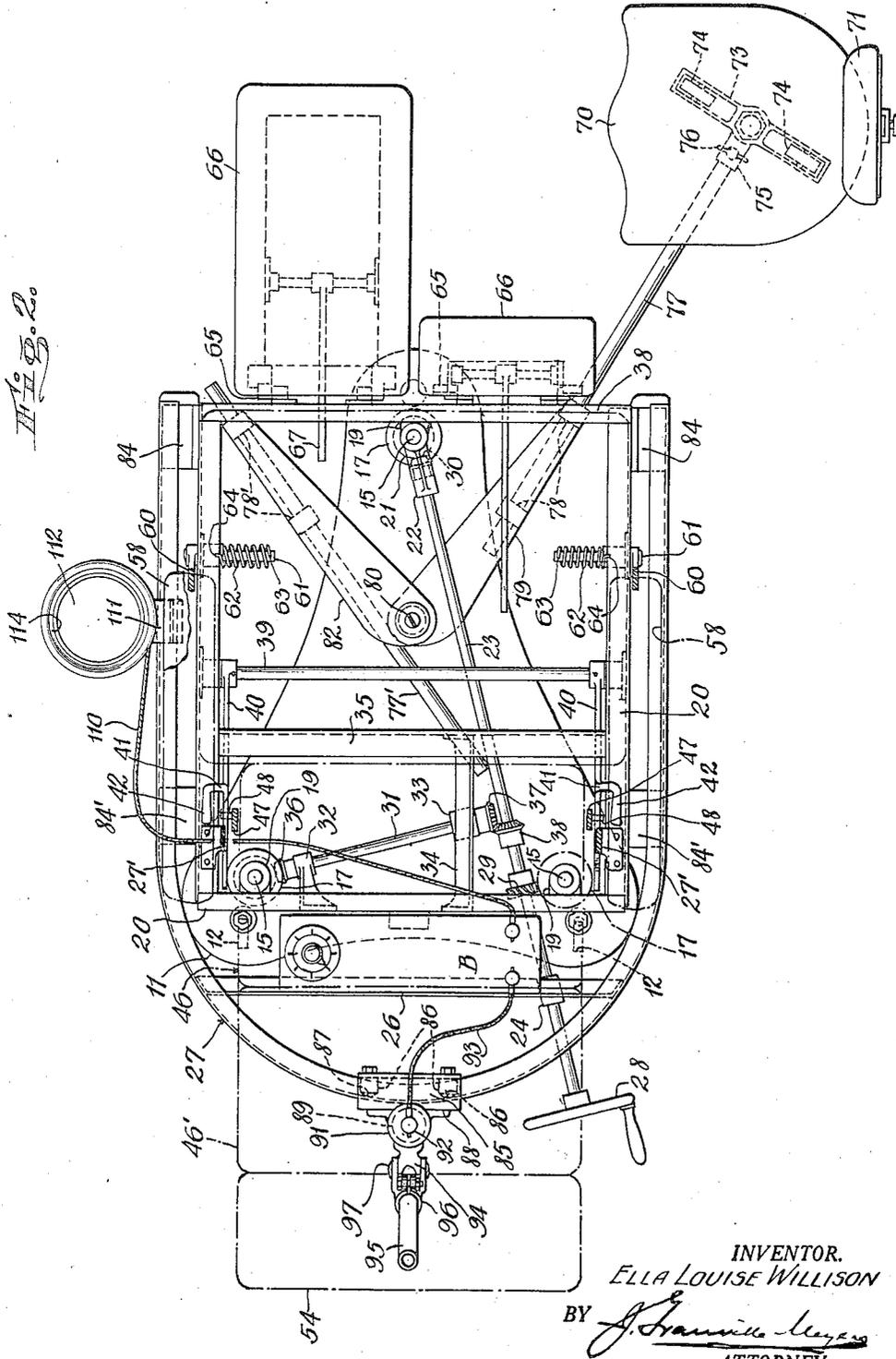
E. L. WILLISON

2,023,563

ELECTROLYSIS APPARATUS

Filed June 21, 1933

5 Sheets-Sheet 2



INVENTOR.
ELLA LOUISE WILLISON

BY *J. Francis Meyer*
ATTORNEY.

Dec. 10, 1935.

E. L. WILLISON

2,023,563

ELECTROLYSIS APPARATUS

Filed June 21, 1933

5 Sheets-Sheet 3

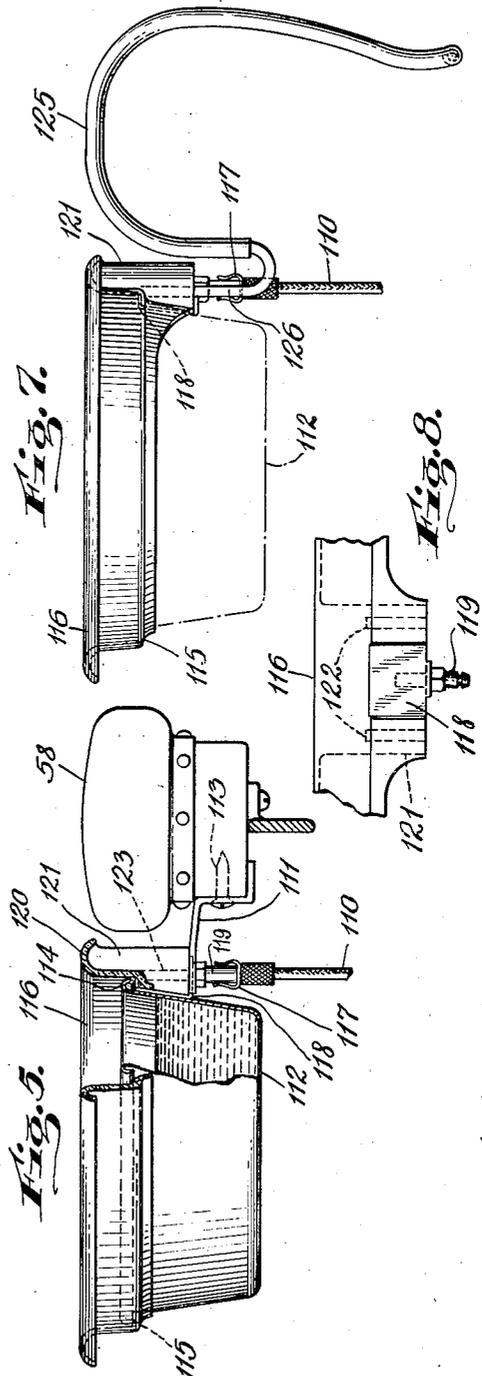
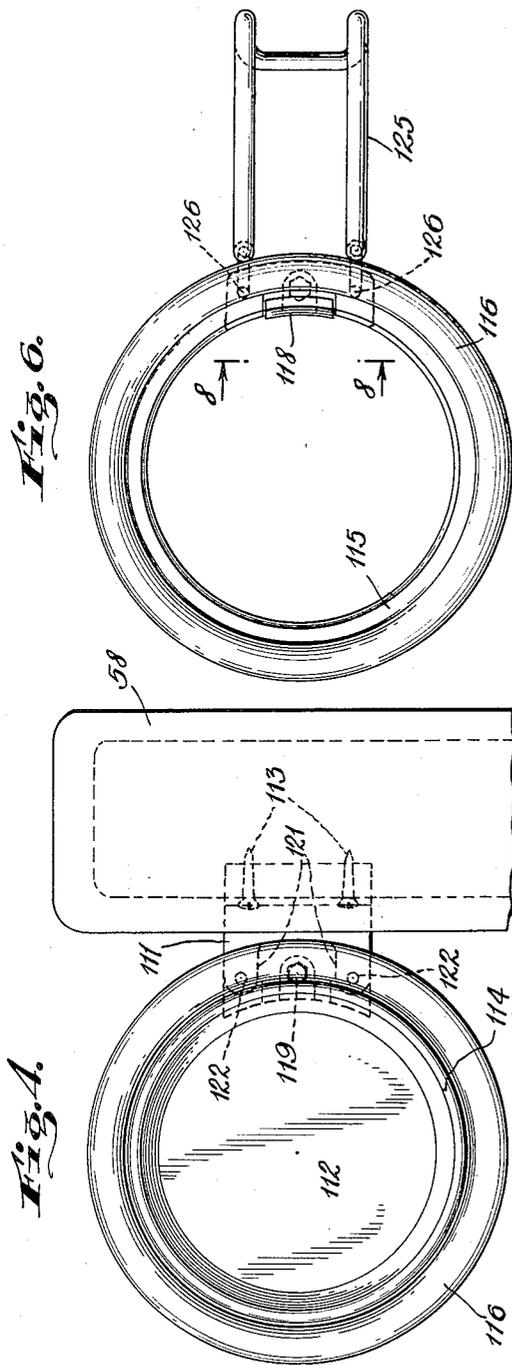


Fig. A.

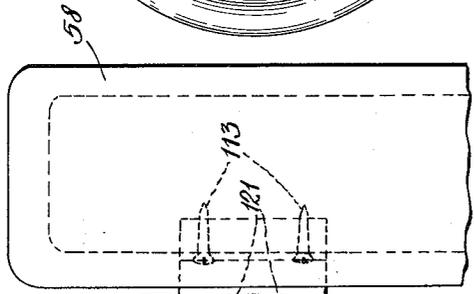


Fig. 5.

Fig. 8.

INVENTOR.
ELLA LOUISE WILLISON
BY *J. Hamilton*
ATTORNEY.

Dec. 10, 1935.

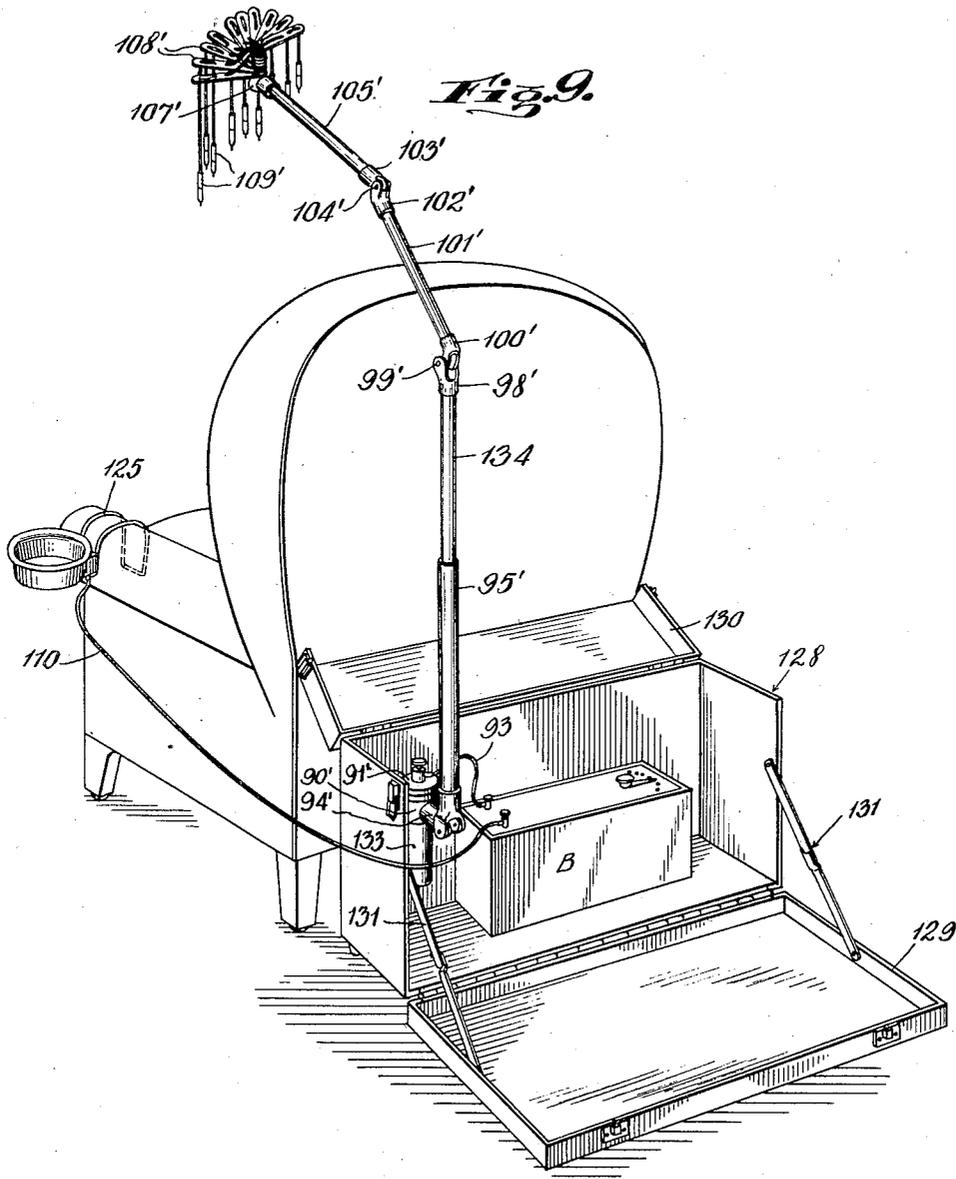
E. L. WILLISON

2,023,563

ELECTROLYSIS APPARATUS

Filed June 21, 1933

5 Sheets-Sheet 4



INVENTOR.
ELLA LOUISE WILLISON
BY *J. Francis Lloyd*
ATTORNEY.

Dec. 10, 1935.

E. L. WILLISON

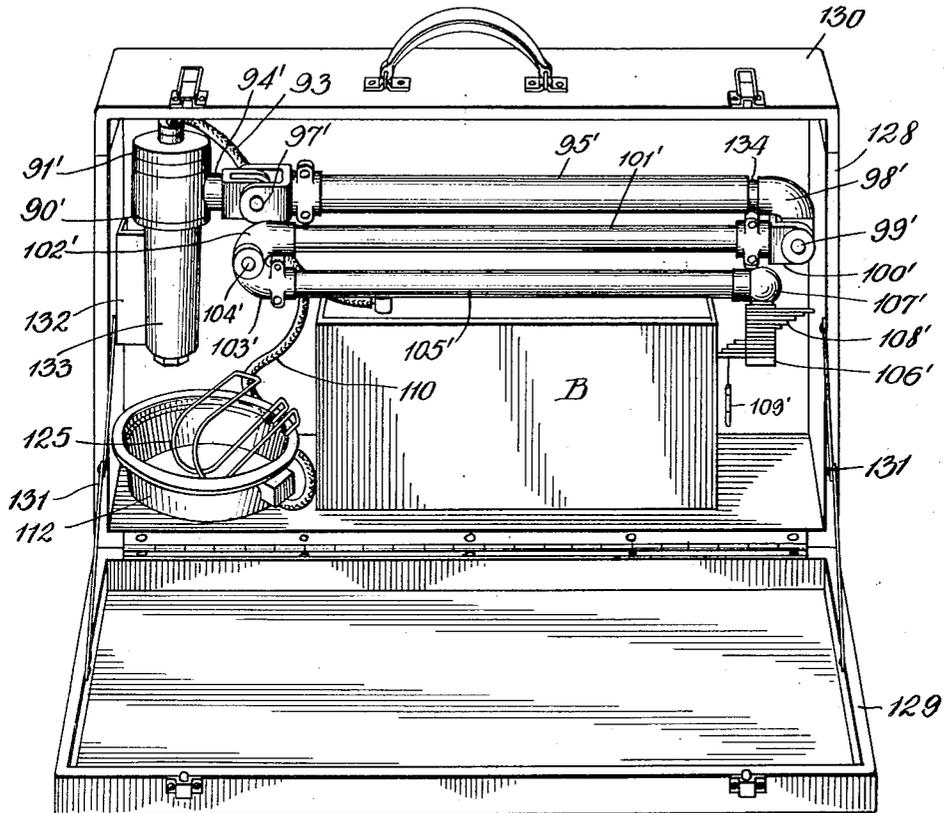
2,023,563

ELECTROLYSIS APPARATUS

Filed June 21, 1933

5 Sheets-Sheet 5

Fig. 10.



INVENTOR.
ELLA LOUISE WILLISON
BY *J. Francis Meyer*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,023,563

ELECTROLYSIS APPARATUS

Ella Louise Willison, New York, N. Y.

Application June 21, 1933, Serial No. 676,941

6 Claims. (Cl. 174—177)

My present invention relates generally to apparatus or equipment for use in performing surgical or beauty treatments of various kinds, and, in most aspects, to apparatus or equipment particularly adapted for use in removing hair from various parts of human bodies by a process known as electrolysis.

In my prior Patent 1,070,370 of August 12, 1913, I disclosed a multiple needle holder for electrolysis, embodying a base for attachment to a table or the like, and supporting a sectional standard. The arm supporting the needle holder, as disclosed in said patent, is adapted to be positioned over a chair on which the patient is seated so that the needles may be applied to the part from which the hair is to be removed. The needles were electrically connected to one side of a battery by electric wires and connectors, and the patient was connected to the other side of the battery by holding a wet sponge connected to the battery to complete a circuit through the patient when one or more needles were inserted.

While the foregoing features of construction and operation as disclosed by the said patent are effective to the attainment of the desired end, there is great room for improvement thereover in respect to compactness and arrangement of necessary parts for facility in adjustment and operation, as well as attractive appearance, and utmost comfort to the patient, as will be hereinafter pointed out in detail.

With the foregoing in mind, the principal objects of my present invention include, first the provision of an adjustable base and standard to support the needle holder associated either with a permanent structure such as a chair or a portable receptacle; second, the provision of a compact and convenient arrangement of battery, and needle holder support in connection either with the chair or portable receptacle, third, the provision of an adjustable operating chair preferably with split cushion on the lower extension to facilitate working on the lower extremities or legs of the patient; fourth, the provision of a receptacle adapted to contain a liquid into which the patient dips the fingers, said receptacle being constructed to provide against burning of the portion of the hand not in the liquid and connectable to the battery in a convenient and easy manner to complete a circuit through the body of the patient, needles, and liquid; fifth, the provision of an operator's seat attached to the chair and affording adjustment both laterally and perpendicularly to accommodate the operator in desired positions required or necessary in

working on various parts of a patient's body; sixth, the provision of a needle holder affording easy and tight connection with an electric wire connected with the battery.

The foregoing and other objects and advantages of the invention and the means for accomplishing the same will be hereinafter referred to and pointed out in detail during the course of the description of the accompanying drawings, in which

Fig. 1 is a side elevation, with parts broken away, of a chair constructed in accordance with my invention with the battery support, needle holder support, liquid receptacle and operator's seat associated therewith;

Fig. 2 is a view taken on the line 2—2 of Fig. 1;

Fig. 3 is a longitudinal central sectional view through a needle holder embodying one of the features of the invention;

Fig. 4 is a top plan view of the receptacle shown in Fig. 1 connected to the arm of the chair shown in the same figure;

Fig. 5 is an end elevation and side view with parts broken away of the arm of the chair, receptacle, and electric conductor shown in Fig. 4;

Fig. 6 is a view similar to Fig. 4 showing the receptacle provided with attaching means for holding it to the arms of chairs for portable use;

Fig. 7 is a view similar to Fig. 5 of the receptacle and attaching means shown in Fig. 6;

Fig. 8 is a view taken on the line 8—8 of Fig. 6;

Fig. 9 is a perspective view of a portable apparatus embodying the invention positioned relative to a chair not embodying the invention; and

Fig. 10 is a front perspective view of the portable apparatus shown in Fig. 9 folded into the container with the front of the container opened.

In Figs. 1 and 2, the numeral 11 designates a base plate to which are connected the casters or rollers 12 by brackets designated generally by the numeral 13. The base plate 11 is of generally triangular form having two corners at the rear of the chair and one at the approximate center of the front of the chair, the casters being located at or adjacent each of the corners. The base 11 has mounted or formed thereon upstanding tubular internally screw threaded supports 14, one adjacent each of the rear corners of the base 11 and one adjacent the front end of the base. These sockets or supports 14 receive elongated screws 15 which are keyed to the collars 16 of gears 17 as by pins 18. The upper ends of the screws 15 are journaled in brackets 19 which are rigidly secured to frame 20 composed of front and back cross members and two side members, as

shown best in Fig. 2. The front bracket 19 has a depending arm 21, the lower end of which is formed with a journal 22 for a shaft 23. Another journal 24 for the shaft 23 is provided on a bracket 25 connected to a cross piece 26 extending between and secured to opposite sides of a guide member hereinafter described.

The shaft 23 is adapted for rotation in the bearings 22 and 24 by means of the hand wheel 28 attached to the end of the shaft which projects beyond the frame 27 at the rear of the chair, and the shaft has keyed thereto a gear 29 meshing with the gear 17, and a gear 30 meshing with the gear 17 at the front of the chair. A stub-shaft 31 is journaled through one end of a bracket 32 connected to the rear cross member of the frame 20 and through one end of bracket 33 connected to a cross bar 34 connected at one end to the rear cross member of the frame 20, and at its other end to an intermediate plate or bar 35 mounted between the side pieces of the frame 20. One end of the shaft 31 has keyed thereto a gear or pinion 36 meshing the other rear gear 17 and to its other end a gear or pinion 37 meshing with a gear 38 on the shaft 23.

From the foregoing it will be seen that the parts 11 and 14 are fixed or remain stationary on the floor, while the screws 15 when rotated by the gears to which they are keyed when the shaft 23 is rotated will raise the frame 20, and since the shaft 23 is journaled through brackets 25 and 19 connected to the frame, the shaft 23 and the gears connected thereto, as well as the gears on the screws, will be moved according to the rotation of the shaft 23 and gears driven thereby. Thus the frame may be raised or lowered. The seat cushion 38 rests on the sides and front of the frame 20 and intermediate rod 35.

Between opposite sides of frame 20 is mounted a rod 39 and on this rod are journaled rack bars 40, one at each side of the frame. Said bars each having attached to an upward projection 41 a handle 42 and having at their rear ends and beyond the surface thereof notches 43. A back rest frame 44 composed of opposite side pieces connected by rods 45 on which rest the cushions 46, has depending arms 47 at each side, and each of the arms 47 carries a stud 48 to engage with the notches 43 according to the adjustment of the back, as hereinafter explained. The back rest frame 44 is pivotally mounted on brackets 27' carried on frame 20. The back rest frame 44 is in two parts having an extension frame member 44' adjustable relative to frame 44. A pivot 48 is provided on the projection 49 on each side frame 44 to carry the frame portion 44' thus enabling this portion of the back rest to be slightly adjusted and is held in position by means of the wing nut 50 and the arcuate slot 51 on the ends of frame 44'.

On the top or rearmost ends of the side pieces of the frame 44' are arms 52 pivotally connected to the side pieces at 53 and carrying at their outer ends a pillow or head rest 54. Each of the side pieces of the frame 44 has a projection 55 to the end of which is pivotally connected at 56 one end of a link 57 to which is secured an arm rest 58. The other end of the link 57 is pivotally connected at 59 to a link 60 which (see Fig. 2) is connected to a bolt 61 extending through the side of the frame 20. A coil spring 62 surrounds each of the bolts 61 and has one end anchored at 63 to the bolt and its other end anchored at 64 to the frame 20.

The operation of the back rest and arm rest

supports is as follows: If it is desired to lower the back, the lever or the handles 42 are grasped and turned to lift the rack 40 so that the notch 43 which is in engagement with the stud 48 will be lifted clear thereof. The back is then dropped or lowered to the desired position, and the rack bars 40 are permitted to drop, so that a notch 43 will engage the stud 48. During up and down movement of the back, the link 57 is moved forward or backward and thereby imparting oscillating movement to the link 60. At the front of the chair and to the front cross member of the frame 20 are connected by hinges 65 a pair of leg rests, that is, cushion leg supports 66. Each of the leg supports 66 has pivotally connected to its bottom a rack bar 67 having teeth 68 providing notches for adjustable engagement with a cross bar 69 at the front of the chair. Thus, the operator may raise or lower either or both of the cushion members 66 by manipulation of the rack bar 67, that is, by raising the rack bar from engagement with the cross bar 69 the teeth may pass the cross bar so that the rack bar will slide down beneath the chair and the cushion member swing down against the front of the chair.

In Figs. 1 and 2, I have shown one of the cushion members raised and the other one lowered. The purpose of this arrangement is for convenience in working on the legs of the patient. For further convenience in working on the legs of the patient, I provide an operator's stool having a seat 70 and preferably back rest 71. The seat 70 is supported by a plate connected to the top of a screw 71 which fits within a tubular socket 72 similar to the sockets 14. The base 73 of the stool which supports the socket 72 carries rollers or casters 74 and there is a tubular extension or socket 75 extending laterally off of the base and preferably provided with an opening through which is mounted a set screw 76. The socket 75 receives the rod 77 which is slidably mounted through bosses 78 on an arm 79, one end of which is provided with an opening to receive a pivot pin 80 mounted in a boss 81 on the base 11. A second arm 82 identical in construction with the arm 79 is also mounted on the pin 81 and provided with bosses 78' through which is mounted a rod 77'. The arms 79 and 82 extend from the pin 80 toward the front corners of the chair, there being one on each side of the socket 14, and it should be obvious from the foregoing, that the arms are swingable on the pin 80 to move toward and away from the socket 14, and hence laterally relative to the leg supports 66. This permits the operator to be seated on either side of the chair, and one stool may be utilized instead of providing two stools as it is only necessary to unscrew the set screw 76, so that the stool may be moved away from the rod 77 and rolled over to the other side of the chair and connected to the rod 77' by positioning the rod in the socket 75 and tightening the screw. Furthermore, and in either position, the operator may adjust the position of the stool by pushing it or pulling it so that the rod 77 will slide through the bosses 78. Thus the stool may be moved toward and away from the chair, and as above explained, the stool may be also rolled toward and away from the foot rest 66, during which movement the arms 79 and 82, whichever is being used, will move about the pivot pin 80.

Reverting to the U-shaped track 27 which embraces the sides and back of the chair, this track is of channel formation and is secured to and supported by the frame 20, through the medium 75

of plates or brackets 84 at the front ends of the frame and similar plates or brackets 84' at the rear of the frame. A C-shaped carrier 85 is mounted around the frame 27 and has connected thereto rollers 86 by means of bolts or pins 87, so that the carrier may be moved along the track 27. The long arm of the carrier 88 is connected to or supports a socket 89 which receives the lower end or stem of a base 90. The top of the base supports a distributor cap 91 having a central electrode, not shown, to which is electrically connected as through the connector 92, one end of the cable 93, the other end of which is connected to one terminal of the battery B. Also within the distributor cap are a plurality of electrical contacts connected to the central contact and/or leading through a tubular extension 94 of the base 90 to the needle holders, as hereinafter explained, there being one wire leading to each needle. A tubular arm 95 has a coupling member 96 connected to its lower end and the lower end of the coupling member is forked to receive the end of the extension 94 for pivotal connection thereto by pin or bolt 97. The upper end of the arm 95 has a coupling 98 similar to the coupling 96 secured thereto and also pivotally connected at 99 to another coupling member 100 which receives a tubular arm 101. Another coupling member 102 is secured to the other end of the arm 101 and is pivotally connected to another coupling 103 at 104. The coupling 103 is connected to a third arm 105, on the outer end of which is an upright short tubular section 106, the end 107 of which is connected to the arm 105. The supports for the needle holders are designated generally by the numeral 108 and are constructed in accordance with the disclosure of my prior Patent 1,070,370 for adjustable movement to position the needles, the supports being pivoted on the section 106 as disclosed in my said patent. The individual needle holders 109 are shown in detail in Fig. 3 and will be presently described.

The entire needle support, that is, the group of arms 108 may be swung pivotally on the part 106 and the arm 105 may be adjusted individually with respect to the arm 101, or the arms 105 and 101 may be adjusted collectively with respect to the arm 95 on the pivot 99 and the arm 95 in turn may be adjusted on the pivot 97. The arms 108 would preferably be made of "Bakelite" or other similar material of light weight, and of such character that it may be easily cleansed, and, of course, all of the metallic parts may be finished in chromium or any other desired and attractive sanitary material.

I wish to call attention to the fact that the chair including the frame 20 and track 27 move as a unit up and down according to the rotation of the shaft 23, and the operator can move the entire needle supporting apparatus to convenient positions according to the location of the part of the body to which the needles are to be applied, simply by moving the base 90 to the left or right to cause the carrier 85 to travel along the track.

As has been mentioned, an electrolysis treatment for the removal of hair requires the completion of a circuit through the body of the patient, and as has been described, the needles are connected through the wires leading through the tubular arms 95, 101, 105, and suspended from the arms 108 to one terminal of the battery. The other terminal of the battery is connected by a cable or wire 110 to a bracket 111 which receives the basin 112 of electric conducting material and which bracket supports a contact engaging said

basin, so that when water is placed in the basin and the patient's hand is partly immersed in water, the circuit is completed.

In Figs. 4 and 5 of the drawings, there is shown in detail the preferred embodiment of the manner of constructing and mounting the basin or receptacle 112, wherein the bracket 111 is shown attached to the arm of the chair by screws 113. The top of the receptacle or basin 112 is provided with a bead or annular flange 114 which rests upon shoulder 115 of a supporting collar 116 formed of non-conducting material. The cable 110 is shown connected to the bracket 111 by a clamp 117, and it will be noted that a plate 118 is secured to the bracket to contact the receptacle 112, this plate being in contact with the connector 119 which receives the clamp 117. The collar 116 has beneath a portion of its curved rim 120, depending blocks or enlargements 121 provided with bores 122 which receive upstanding pins 123 on the bracket 111 to removably mount the receptacle or basin in place on the arm of the chair, so that the patient's hand may conveniently rest on the non-conducting collar 116 with the fingers immersed in the liquid in the receptacle 112. The foregoing construction and arrangement of the basin or receptacle is not only extremely convenient and simple, but also prevents injury to the patient's hand, because the skin will not be burned as would be the case if the hand were resting on the metal receptacle.

In Figs. 6 and 7, there is shown a basin or receptacle constructed exactly in accordance with that shown in Figs. 4 and 5, but illustrating how the same receptacle may be employed for portable use. In other words, the mounting bracket 111 of Figs. 4 and 5 is especially designed for permanent installation on a chair. By providing a hanging support 125 in the nature of a rubber covered metal strip bent to provide a relatively wide U-shaped portion to engage over the arm of the chair and having upstanding portions 126 to engage in the sockets 122, the same receptacle may be used for portable use in any home, such use being illustrated in Fig. 9, where the support 125 is shown on the arm of a chair and holding the receptacle at the side of the arm so that the patient may dip the fingers in the water in the manner previously explained.

As has been mentioned, an important object of the invention is to so construct and arrange essential parts of the apparatus that they may be used not only with a permanent installation such as shown in Figs. 1 and 2 but also for portable use, that is, may be carried in compact form within a case, so that it may be transported with facility and operated in giving home treatments. Such a form of the invention is shown in Figs. 9 and 10, wherein the numeral 128 designates generally the case composed of bottom, side, and end pieces rigidly connected and a side 129 hingedly connected to the bottom and a top 130 hingedly connected to the other side. Toggles 131 are connected to the side 129 and the ends, so that when the side is swung down into position as shown in Fig. 9, it will assist in maintaining the apparatus in upright position for operation. A bracket 132 is connected to the interior of one of the ends and carries a socket 133 to receive the stem of the base 90' which is the same as the base 90 of Fig. 1, having the lateral extension 94' housing wires from the distributor cap 91', which wires also are housed by the tubular arm 95' pivotally connected to the extension 94' at 97', the same as in Fig. 1. Coupling 98' is pivot-

ally connected at 99' to a coupling 100 and the coupling 98' is carried by a tubular member 134 telescopically fitting within the arm 95' and slidable in and out of the arm 95'. With the exception of this telescoping arrangement of the parts 95' and 132, the other parts of the needle carrier and standard are the same as in Fig. 1, that is, the parts 101', 102', 103', 104', 105', 106', 107' and 108' are the same as corresponding unprimed parts in Fig. 1 and operate in exactly the same manner in making adjustment of the needle holder with respect to the chair in which the patient is seated. The stem of the base 90' is swiveled in the socket 133, so that the sectional standard may be swung around from the position of Fig. 10 where the parts are folded into the case to the position of Fig. 9 or in other position between the walls of the case adjacent the bracket 132. The receptacle in which the patient's fingers are to be immersed is of the type shown in Figs. 6 and 7, and the curved arms 125 are shown engaged over the arm of a chair. The cable 110 leads from the contact on the receptacle to one terminal of the battery B which is mounted on the bottom of the case. The other cable 93 connects the other terminal of the battery to the central electrode on the distributor cap on the base 90', the same as in Fig. 1, and the base is mounted adjacent the top of the case a sufficient distance to leave a space to receive the receptacle and support 125 when the parts are folded within the case for transportation.

The operator may keep the complete apparatus, shown in Fig. 10, at his or her place of business, folded and packed within the case in the manner shown in Fig. 10, so that when it is necessary to go out to give a treatment, he or she merely takes the case to the patient's home, opens the top 130, swings the side 129 down until the toggles 131 lock, then swings the arms 95', 101', 105' up and out of the case, then swings the arm 101 on its pivot 99' and the arm 105 on its pivot 104', and adjusts the needle carriers 108' to the desired position. The bar 134 may be elevated out of the arm 95' if it is necessary to gain additional elevation of the needle carrier 108. The receptacle is lifted out of the case and connected to the support 125 which is engaged over the arm of the chair and then after the liquid has been poured into the receptacle the apparatus is ready for use. This all takes a very short time and is done with facility, due to the convenient arrangement of the connections between the arms for adjustment. When the operation has been completed, the receptacle may be emptied and the sectional standard folded into the case in the position of Fig. 10 and the receptacle packed and the case closed.

An individual needle holder made in accordance with my present invention is shown in detail in Fig. 3, where the numeral 135 designates a finger grip portion or tip made of non-conducting material, such as "Bakelite", having a bore 136 internally screw threaded and communicating with an aperture 137 through which is mounted the needle 138. A metal shell 139 is provided with a reduced screw threaded chuck end 140 fitting within the bore 136. It will be noted that the clutch portion 140 and the bore 136 are tapered and each has cooperating screw threads so that when the clutch portion 140 is screwed into the bore 136 it will be contracted to firmly grip the shank of the needle 138, which extends also through an aperture 141 in the shell 139. The outer end of the shell 139 is provided

with a screw threaded bore 142 which receives the bushing 143 having an opening in its end, so that the cable or wire leading to the needle from the distributor cap may be inserted through said opening and disposed within the bushing which is also screw threaded inside to receive a pointed screw 144 which is slotted at 145 to receive a screw driver so that the screw may be tightened up to drive the point against the wires and firmly clamp them within the bushing, thus assuring a good and direct contact.

To assemble the needle holders shown in Fig. 3, that is, to connect it to the wires leading from the distributor, the shell 139 is disconnected from the tip 135 by unscrewing the chuck or clamp 140 out of the bore 136 so that the needle may be inserted through the aperture 140, opening in the chuck, and aperture 137. The plug 143 is screwed out of the bore 142, the wire is inserted through the opening in the plug 143 and the pointed screw 144 is screwed down until the point wedges the ends of the wires. The shell 139 is then attached to the plug 143 and the tip 135 is screwed on to the chuck 140 until the chuck firmly clamps the needle which is also in contact with the screw 144.

I claim:

1. Electrolysis apparatus comprising a chair, a track supported by said chair, a carrier movably mounted on said track, a standard supported by said carrier, and a needle holder carried by said standard for movement therewith along the chair.

2. Apparatus for use in electrolysis comprising a substantially U-shaped track to embrace a chair or the like, a carrier movably mounted on said track, a standard supported by said carrier, and a needle support on said standard movable therewith to positions on both arms of and intermediate points on the track.

3. In combination with a chair having a supporting frame and base, a U-shaped track secured to the frame in spaced relation thereto with its arms at the sides of the chair and its intermediate portion at the rear of the chair, a carrier movably mounted on said track, and an electrolysis needle holder standard mounted on the carrier for movements therewith to points on opposite sides of the chair and at the rear of the chair.

4. In combination with a chair having a supporting frame and a base, a support for an electric battery on the frame at the rear of the chair, a track attached to the frame in spaced relation thereto and to said battery support, a carrier movably mounted on the track, a standard support mounted in said carrier for movement therewith, electric contacts on said standard support, one of said contacts being adapted for connection with the battery to permit movement of the standard support on the track relative to said frame, chair and battery.

5. In combination with a chair having a supporting frame and a base, a support for an electric battery on the frame at the rear of the chair, a track attached to the frame in spaced relation thereto and to said battery support, a carrier movably mounted on the track, a standard support mounted on said carrier for movement therewith, electric contacts on said standard support, one of said contacts being adapted for connection with the battery to permit movement of the standard support on the track relative to said frame, chair and battery, and means for elevating and lowering said frame, chair, track, stand-

ard support and battery support simultaneously.

6. Electrolysis equipment comprising a chair, a supporting frame for the chair, a support for an electric battery on the frame, a bracket on the arm of the chair to receive a receptacle, means for establishing an electrical connection between the receptacle and battery, said means being carried by the bracket, a track supported by the frame adjacent the chair, a standard for electrolysis needles movably mounted on the track, and means also electrically connecting the needles and battery.

ELLA LOUISE WILLISON.