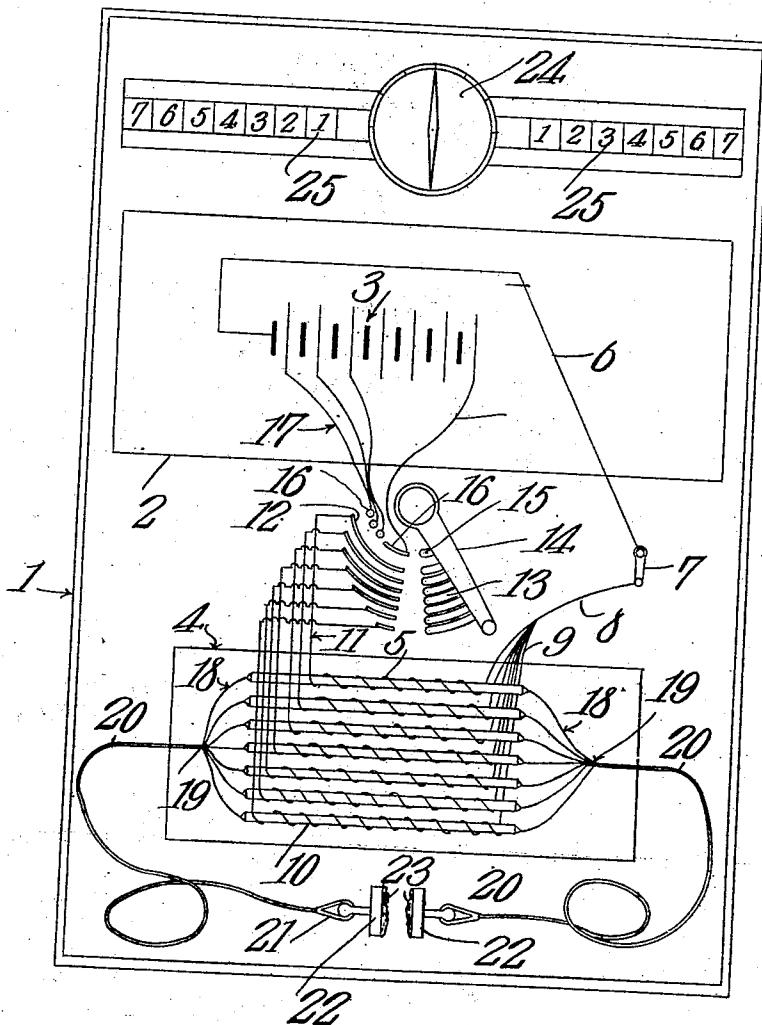


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APPARATUS FOR MAGNETIC TREATMENT OF DISEASES.
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAGNETIC TREATMENT OF DISEASES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, REUBEN S. CLYMER, a citizen of the United States, residing at Allentown, in the county of Lehigh and State 5 of Pennsylvania, have invented a new and useful Apparatus for Magnetic Treatment of Diseases, of which the following is a specification.

This invention has reference to improvements in apparatus for magnetic treatment 10 of diseases, and its object is to provide means whereby the diseased tissue may be located within a magnetic field, which latter may be made intense or weak as desired, 15 and may be made to include a greater or less area of the diseased portion of the body, and further may be so arranged that remedial agents may be applied to the pole pieces.

Such pole pieces must oftentimes be placed 20 at different distances apart and, therefore, it is necessary to regulate the magnetizing forces in order that the magnetic field may be strong or weak, as required.

The invention therefore comprises a series 25 of electro-magnets with a charging source, such as a battery, with means for coupling up the magnets and the battery in such order that the magnetic field produced may be of the desired strength. By using a number of 30 electro-magnets and connecting their like poles together in multiple, and by then extending these poles by suitable magnetic material to suitable pole pieces the connecting strand of the material being of such form as 35 to be flexible, the pole pieces may be adjusted to any part of the body with great facility and may be placed at any distance apart to include a greater or less area.

The invention, however, will be best understood by a consideration of the following 40 detail description taken in connection with the accompanying drawings forming a part of this specification, in which drawing the figure is a diagram showing the arrangement 45 of the apparatus forming the subject-matter of this invention.

Referring to the drawing there is shown a base board 1, which may be of any suitable shape and is designed to be placed upon a 50 suitable support or stand. Near one end of this board is provided a casing 2 simply indicated in outline in the drawing, and in this casing is inclosed a battery 3 constituting a source of electric current. The battery is

shown as consisting of seven elements, but 55 may consist of more or less as desired.

Near the other end of the base board is another casing 4 simply indicated in outline, and within this casing are supported a number of bar electro-magnets 5, shown in the 60 drawing as seven in number, but the number may be varied as desired.

One terminal of the battery is connected by a conductor 6 to an ordinary single point switch 7, and the contact block of this 65 switch is connected by a conductor 8 to branch conductors 9 leading each to the terminal of the winding 10 of a corresponding bar magnet 5. The other terminals of the winding of each bar electro-magnet 5 is 70 connected by a respective conductor 11 to a contact strip 12 in the path of a corresponding brush 13 upon a switch lever 14. In the path of still another brush 15 carried by the 75 switch lever, are a series of contacts 16, each of which is connected by a conductor 17 to the battery. The arrangement is such that when the brush 15 is upon one end of the contact 16, then one cell of the battery is included in the circuit. When the brush 15 80 is upon the second contact then two cells are included. When the brush 15 is upon the third contact then three cells are included, and when the brush 15 is upon the fourth contact, which is a long contact, then all 85 seven cells are included. There are as many brushes 13 as there are contacts 12, and these contacts 12 are of different lengths so that when the brushes 13 are caused to sweep over these contacts the respective coils 10 of 90 the bar electro-magnets 5 will be cut in or out of circuit, as the case may be. Now, let it be supposed that the switch lever 14 is swung to the left, as viewed in the figure, until a brush 15 is upon the contact 16 95 farthest to the left, and the corresponding brush 13 is upon the longest of the contacts 12. Under these circumstances, the first cell of the battery to the left is coupled up to that bar magnet 5 in circuit with the longest contact 12. Now, if the lever 14 be moved to the right until the brush 15 is upon the second contact, then two brushes 13 will be upon the longest and the next to the longest contacts 12. This will include two bar 100 electro-magnets in the circuit in multiple arc. A further movement of the switch lever 14 to the right will include three bar magnets, then

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four bar magnets, and so on until they are all included in multiple arc with the battery. At any time, however, and under any condition of the switch lever 14, the circuit may 5 be broken at the switch 7.

Each end of the core of each bar electro-magnet 5 is pointed to concentrate the lines of force, and leading from such pointed ends are iron wires or rods 18 ultimately joined, 10 as shown at 19, and from these joined ends lead other wires or rods 20 of such nature as to be more or less flexible and constituting extended pole pieces for the magnets. The free ends of the strands 20 terminate in clips 15 21 which should be of magnetic material, and these clips engage and hold pole pieces 22, also of magnetic material. The free ends of the pole pieces 22 are provided with some absorbent material 23, such, for instance, as 20 sponge, for the application of remedial agents in fluid form.

At one end of the base board 1 is mounted a magnetometer 24 having on each side a scale 25. By this means the pole pieces 22 25 may be placed upon the scale and should, when the battery circuits are closed, deflect the magnetic needle to a certain definite extent. For instance, suppose that one of the pole pieces was placed upon the index point 30 numbered 1 and a single cell or battery was included in the circuit. Then there is a certain definite deflection of the needle and this deflection is brought back to the neutral point by the placing of the other pole piece 35 22 upon the corresponding index point on the other side of the magnetometer. If two cells of battery be included then the deflection should be the same as for one cell when the pole piece is placed upon the index 2, 40 and so on through the seven points, the deflection being the same for the corresponding number of magnets and batteries included. By this means it is possible to always adjust the magnetic strength even when the batteries 45 become weak and the magnets are not brought up to their full strength as before, although of course the maximum strength cannot then be attained, but magnetic strength somewhat less than the maximum 50 may be had with the weaker battery, and this is at once apparent from the test with the magnetometer. Suppose, now that it is desirable to treat diseases with the instrument described. A remedial agent may be 55 placed upon the appropriate pole piece 22, and the pole pieces are placed upon the skin of the patient in the neighborhood of the diseased tissue, and the magnetic field is made weak or strong, depending upon the 60 conditions present and the depth of the diseased tissues below the skin. The time of application of the magnetic forces depends upon the conditions present and must be regulated in accordance with the judgment

of the attendant physician since no hard and 65 fast rules can be formulated.

The strands 20 should be suitably insulated or protected so as not to come into actual physical contact, for this would tend to short circuit the magnetic lines of force 70 and either weaken or obliterate the magnetic field between the pole pieces 22.

Assuming that the batteries are of normal strength, then the physician using the instrument may with confidence set the switch 14 75 to the position to include one, two or more of the electro-magnets up to the full strength of the instrument, as his judgment may dictate. When, however, the instrument has been used for some time then the voltage of 80 the batteries drops and the magnets are no longer charged to the initial extent. Under these circumstances it is necessary for the attending physician to place the pole pieces 22 upon the magnetometer scale and the 85 switch arm 14 is moved until the required indication of the magnetometer needle is obtained, and this will be irrespective of the number of magnets included in the circuit, the only difference then being that the maximum magnetic effect cannot under these 90 conditions be obtained. When the batteries have run down to too great an extent then they may be replaced by fresh batteries if of the dry cell type, or recharged if fluid batteries or storage batteries.

What is claimed is:—

1. A magnetic apparatus for the treatment of diseases comprising a number of electro-magnets having their like polar ends 100 connected in multiple, flexible magnetic strands leading from the connected ends of the magnets, and pole pieces carried by the free ends of the flexible strands, the strands and pole pieces being made of magnetic 105 material.

2. An instrument for the magnetic treatment of diseases comprising a number of electro-magnets having their like polar ends connected in multiple, strands of magnetic 110 material leading from the connected ends of the magnets, pole pieces of magnetic material carried by the free ends of the strands, a source of electric current, and means for coupling the coils of the electro-magnets individually into multiple arc relation with the 115 source of current.

3. An instrument for the magnetic treatment of diseases, comprising a series of bar electro-magnets having their polar ends tapering and connected together in multiple arc, flexible strands of magnetic material extending from the connected ends of the bar magnets, pole pieces of magnetic material connected to the free ends of the flexible 120 strands, a battery, and a switch for connecting the battery to the coils of electro-magnets 125 comprising a switch arm carrying a se-

fries of brushes, and contacts in the path of the brushes, said contacts being of different lengths and connected respectively to the magnet coils, another brush on the switch 5 arm, and battery terminals in the path of the last-named brush for coupling up the battery to the respective magnet coils in regular order.

4. An instrument for the magnetic treatment of diseases, comprising a series of bar electro-magnets having their polar ends tapering and connected together in multiple arc, flexible strands of magnetic material extending from the connected ends of the bar 10 magnets, pole pieces of magnetic material connected to the free ends of the flexible strands, a battery, and a switch for connecting the battery to the coils of electro-magnets comprising a switch arm carrying a series of

brushes, and contacts in the path of the 20 brushes, said contacts being of different lengths and connected respectively to the magnet coils, another brush on the switch arm, battery terminals in the path of the last-named brush for coupling up the battery 25 to the respective magnet coils in regular order, and a magnetometer associated with the electro-magnets and source of power therefor for determining the strength of the magnets irrespective of the number of batteries connected therewith.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

REUBEN S. CLYMER.

Witnesses:

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MARY O'DONNELL.