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PATENTED JAN. 8, 1907.

N. N. S. MATCOVITCH.

ELECTRIC HEATER.

APPLICATION FILED JAN. 25, 1906.

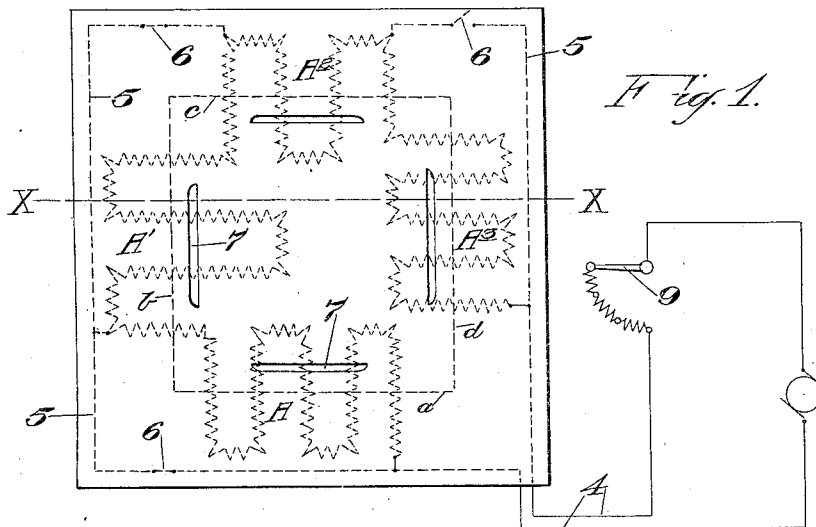


Fig. 1.



Fig. 2.

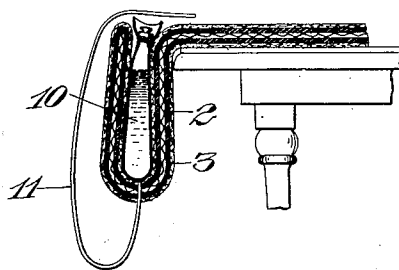


Fig. 3.

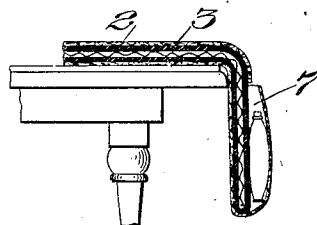


Fig. 4.

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UNITED STATES PATENT OFFICE.

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ELECTRIC HEATER.

No. 840,857.

Specification of Letters Patent.

Patented Jan. 8, 1907.

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To all whom it may concern:

Be it known that I, NICHOLAS N. S. MATCOVITCH, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Electric Heaters, of which the following is a specification.

My invention relates to electric heaters, and pertains especially to electrically-heated fabrics. Its object is to provide a flexible electric heater suitable for use particularly in the sick-room and in hospitals, and which may be variously employed either as a bed-covering or blanket, having means for locally applying heat, or as a table-cover, with pockets for the reception of milk-bottles, water-bags, &c., which are to be kept constantly warm.

The invention consists of the parts and the construction and the combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a plan view representing diagrammatically my invention. Fig. 2 is a section in line X X, Fig. 1. Fig. 3 is a sectional view through a pocket, representing a modification of the invention. Fig. 4 is a section through a pocket of the device of Fig. 1.

In the embodiment of my invention I arrange one or more groups of resistances $A A'$ $A^2 A^3$ in series between two sheets of asbestos 2 or like flexible, insulating, non-inflammable material, and inclose these sheets and the resistances between two wool or like blanket-linings 3, the wool and asbestos linings and sheets being stitched or otherwise permanently secured together. German silver wire or other suitable high-resistance flexible conductors may be employed as electric heaters. One terminal of resistance A and an opposite terminal of an adjacent resistance A^3 connect, by the wires 4, with any suitable source of electrical supply. This electric fabric or heater may be of any desired size suitable for table-cloths, blankets, pads, or bandages. Any desired and appropriate weight or quality of lining may be employed. This blanket is adapted for use as a bed-covering for adults or infants, or it may be employed as a table-covering for the purpose of keeping dishes warm in cold weather.

The resistances are arranged in series in

such manner as normally to heat equably the entire surface of the blanket, and they are preferably connected alternately in shunt, as shown at 5, with a switch 6 in each shunt-circuit, so that any one or more of the resistances may be cut out without affecting the heating of the remaining resistance or resistances. The shunt-wires 5 are good conductors, so that with a switch 6 closed practically the full current will pass directly through that wire and cut out a corresponding resistance.

One of the outside linings 3 is provided with pockets or pouches 7, arranged over or proximate to each resistance $A A'$, &c. These pockets are disposed so that with the blanket laid over a small table the pockets will be at the sides and open upward, so that any article, like a milk-bottle, hot-water bag, or anything else which is to be kept warm may be inserted and supported upright.

By having the resistances in shunt it enables the current and heat to be cut off from all the pockets except those which are actually in use. Furthermore, having the resistances in shunt permits local applications of heat to the body, such as are commonly effected by hot-water bags and like means, when the blanket is used for a bed-covering.

The intensity of the current may be proportioned to the number of resistances in use at any one time by any suitable form of controller or rheostat, as shown at 9. With the pointer 9 in the position indicated current is assumed to be passing through only the resistances A^2 and A^3 , all the switches 6 in the shunt-circuits 5 except one being closed.

By making the electric covering of suitable size in the first place and then folding it at the sides and ends along the dotted lines $a b c d$, so as to double the several resistances on themselves, and then stitching the folded-up portions to the body of the fabric a series of electric pockets will be formed which will have both sides of their linings heated, as indicated in the sectional view of Fig. 3. The resistances may be connected in shunt, as before described, to allow the several pockets to be heated independently.

A double-walled double-heated pocket of the above description is particularly useful for receiving and heating and keeping hot a reservoir, such as is employed in conjunction with fountain-syringes. The reservoir,

which is indicated at 10, is inserted into a pocket, and the discharge-tube 11 is passed out through an opening in the bottom of the pocket. The reservoir may be readily re-filled without removing it from the pocket. This same principle of construction is applicable to single bags, pockets, or pouches.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a pair of blankets, of flexible resistance-conductors secured therebetween and arranged in series, and said blankets provided with one or more pockets.

2. The combination with a pair of blankets, of resistance-conductors secured therebetween and arranged in series, and shunt-circuit connections between alternate members of said resistances.

3. The combination with a pair of flexible non-conductor sheets, of a series of resistances secured therebetween and arranged in series, shunt-circuit connections between alternate members of said resistances, and switches in said circuits to permit one or more of said resistances to be cut out.

4. The combination with a pair of flexible non-conductor sheets, of a series of resistances secured therebetween and arranged in series, shunt-circuit connections between certain of said electrical conductors, switches in said circuits to permit one or more of said resistances to be cut out, and pockets arranged relative to said resistances.

5. A covering of flexible material in which is embedded a plurality of resistances, conductors arranged in series, pockets arranged in said covering proximate to the resistances, and means for heating one pocket independent of the others.

6. A heater consisting of a plurality of superposed flexible non-conductor sheets with flexible resistance-conductors arranged between them, said sheets and conductors bent over on one or more sides to form pockets with the resistances disposed on a plurality of sides of a pocket.

7. An electric heater comprising a plurality of superposed flexible non-conductor sheets with flexible resistance-conductors arranged between the sheets, said sheets and conductors bent over to form a pocket with the resistances disposed on two sides of the pocket.

8. An electric heater comprising a plurality of superposed flexible non-conductor sheets with flexible resistance-conductors arranged between the sheets, said sheets and conductors bent over to form a pocket with the resistances disposed on two sides of the pocket, said pocket having an opening in the bottom for the passage of a tube or the like.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

NICHOLAS N. S. MATCOVITCH.

Witnesses:

S. H. NOURSE,
H. NEUNABER.