W. H. CHAPMAN.

MEANS FOR REMOVING STATIC ELECTRICITY.

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904,248.

Patented Nov. 17, 1908.

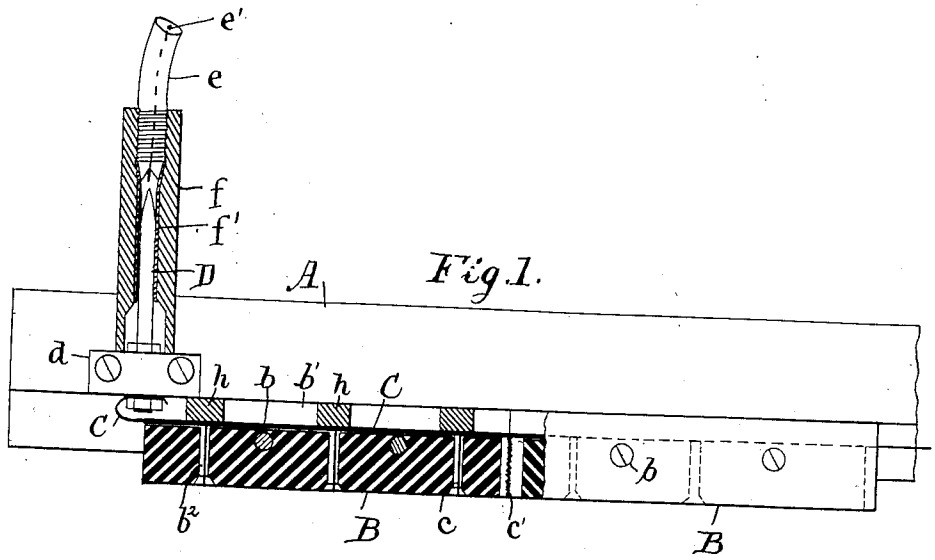


Fig. 1.

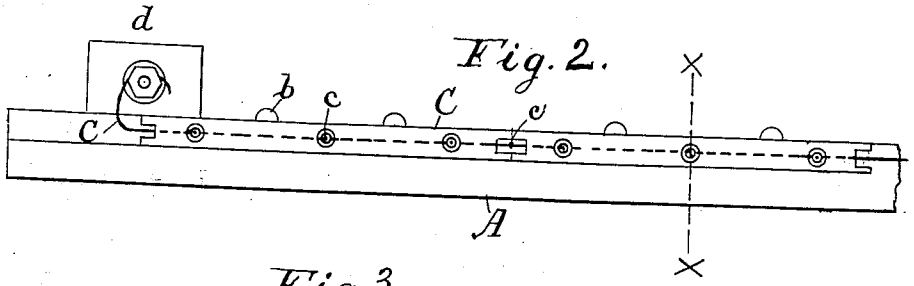


Fig. 2.

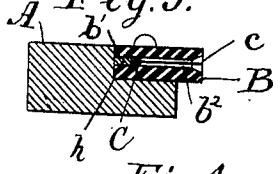


Fig. 3.

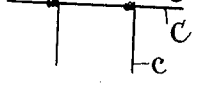


Fig. 4.

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UNITED STATES PATENT OFFICE.

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MEANS FOR REMOVING STATIC ELECTRICITY.

No. 904,248. Specification of Letters Patent. Patented Nov. 17, 1908.

Application filed February 18, 1907. Serial No. 358,102.

To all whom it may concern:

Be it known that I, WILLIAM H. CHAPMAN, a citizen of the United States of America, and resident of Portland, Maine, have invented certain new and useful Improvements in Means for Removing Static Electricity, of which the following is a specification.

My invention relates to an apparatus for removing static electricity from printing presses, paper machines, textile machines of all kinds and other machines where static electricity causes trouble.

The invention relates particularly to providing means for carrying out the process set out in Letters Patent No. 777,598 issued to me Dec. 13th, 1904.

In that process a small wire or conductor having small points or surfaces for radiating electricity is charged with an alternating static charge of high voltage causing a radiating discharge of static electricity from the small points or surfaces of the conductor. This conductor is located in the machine so that the material to be neutralized will pass near it and within range of said discharge.

My present invention has for its object to provide such a conductor or "inductor" as I prefer to call it this inductor being so designed as to be readily attached to my machine when it is to be used and being so made of units which can be built up to form any desired length.

I illustrate my invention by means of the accompanying drawing in which

Figure 1 is a front elevation of my inductor with a portion in section, Fig. 2 is a view of the under edge, Fig. 3 is a section on the line x x of Fig. 2 and Fig. 4 is a detail showing the main wire and branches.

The body of the inductor is composed of a wooden bar A of well seasoned wood cut to a suitable length to extend across the machine or wherever it may be required. This bar has cut in one edge a longitudinal rabbet into which fits a series of plates B made preferably of hard rubber or other good insulating material and secured end to end by means of screws b. These hard rubber sections are placed on the bar end to end, as many as are necessary to fill out the length of the bar desired.

Each of the sections B has a wire or other suitable conductor enclosed or embedded in it having small points or effects presented to the air. As here shown, I form in the back or upper edge of the plate where it comes within the rabbet a longitudinal groove b' from which extend numerous holes b^2 to the under or outer edge of the plate. The outer ends of these holes are preferably enlarged or made flaring. The conductor proper is as here shown a small wire C which extends longitudinally through the groove b' the adjacent ends of the wires where the several sections abut together being twisted together to form connections c' which lie in end grooves formed in the sections. Radiating points are formed by branch wires c formed of short pieces of wire the ends of which are twisted around the wire C the branches c extending through the holes b^2 and terminate at the lower edge of the plate to form discharging points from which the discharge of high tension static electricity takes place into the air and by which the electric charge is neutralized.

Means are provided to properly connect the wire conductor with the source of electricity by a detachable connection. As here shown I have a metal stud D passing through an insulated block d secured to the bar A at or near the end of the end section B. The stud passes directly through the block and is secured by check nuts which serve to bind the end of the wire C. The stud D fits in a socket f which is secured to the end of a cable e having wires e' extending through it. The ends of the wires e' are expanded to make a contact with the upper end of the sleeve f' in which the stud D fits.

The socket f may be readily connected and disconnected according to circumstances.

The bar is to be fastened to the machine so that the terminal points of the branch wires will be presented toward the articles to be neutralized whether it be sheets of paper, yarn, roving or anything of that nature. These points will throw off discharges of electricity which will serve to neutralize the adjacent material.

The current to be applied to the wire C may be direct or alternating, the point of this invention being to provide ready means for radiating the high tension charge which is applied to the wire.

For the purpose of holding the wire C in place I insert blocks h in the groove b' back of each branch wire c.

In the use of the alternating current for the purpose of neutralizing static electricity I find it important to keep the body of metal

in the inductor as small as possible and for that reason I prefer to form both my main conductor and the branches of very fine steel wire using the wooden bar and the hard rubber sections for support and stiffness. It will be seen that my terminal wires have considerable length in proportion to their diameter and they are therefore of the best possible form for discharging electricity from their ends.

The holes b^2 are considerably larger in diameter than the wire so that the wire lies loosely within the hole and the outer end of the hole where the wire terminates is counterbored or enlarged as stated thereby increasing the effectiveness of the wire. The wire is preferably terminated at the surface of the bar so that its end is just flush with said surface. In this manner the points of the wire are protected against injury and they are protected from being moved from their most effective position which is pointing straight outward with the ends free and straight.

I claim:—

1. In a device for removing static electricity, the combination of a strip of non-conducting material having inclosed therein a conductor with portions extending to and terminating flush with the surface of said strip and presenting small points or surfaces to the air.

2. In a device for removing static electricity, the combination of a wooden bar having a longitudinal rabbet therein, a plate of hard rubber fitting in said rabbet, said plate having a longitudinal groove formed in its inner edge, a series of holes extending from said groove to the outer edge, a wire extending through said groove having branches passing through said holes and terminating flush with the surface of the plate.

3. In a device for removing static electricity the combination of a wooden rod having a longitudinal rabbet therein, a series of hard rubber plates secured end to end within said rabbet, each plate having an end groove and a longitudinal groove formed in its inner edge, a series of holes extending from said groove to the outer edge, a wire extending through said groove having branches passing through said holes and terminating flush with the surface of the plate, the ends of said wires being twisted together within the end grooves of said plates.

4. In a device for removing static electricity, the combination of a bar having a longitudinal rabbet therein; a plate of non-conducting material fitting in said rabbet, said plate having a longitudinal groove formed in its inner edge, and a series of holes extending from said groove to the outer edge; a wire extending through said groove having branches passing through said holes and terminating flush with the surface of the plate; and means disposed in said groove to maintain the main wire in position.

5. In a device for removing static electricity, the combination of a bar having a longitudinal rabbet therein; a plate of non-conducting material fitting in said rabbet, said plate having a longitudinal groove formed in its inner edge, and a series of holes extending from said groove to the outer edge; a wire extending through said groove and having branches passing through said holes and terminating flush with the surface of the plate; and blocks disposed in said groove to maintain the main wire in position.

Signed by me at Portland, Maine this 13th day of February, 1907.

WILLIAM H. CHAPMAN.

Witnesses:
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ELEANOR W. DENNIS.