W. S. HADAWAY, Jr.

NEUTRALIZER.

APPLICATION FILED OCT. 23, 1913.

1,163,656. Patented Dec. 14, 1915.

Fig. 1,

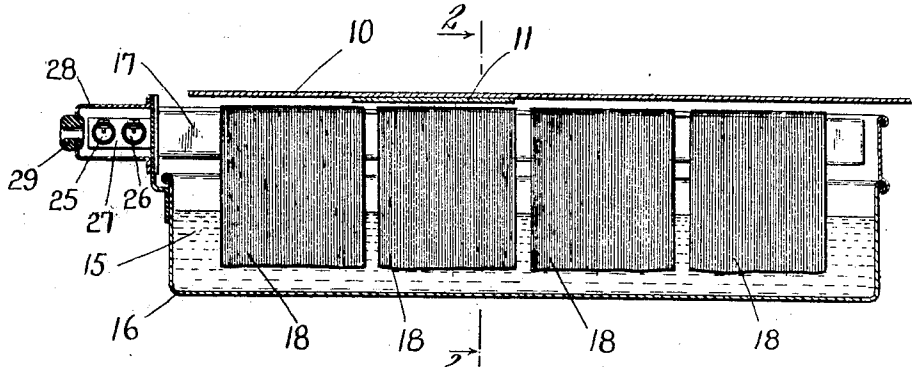


Fig. 2,

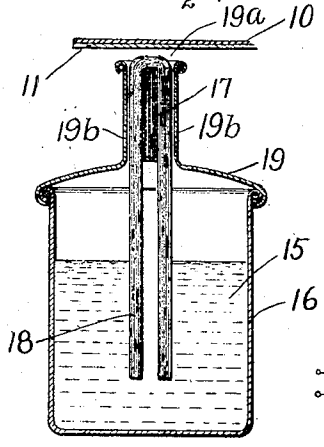


Fig. 4,

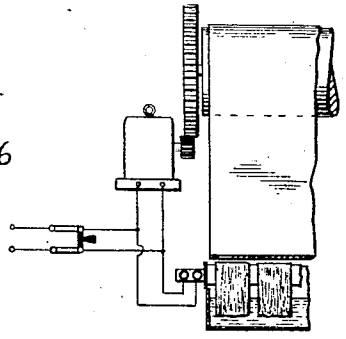
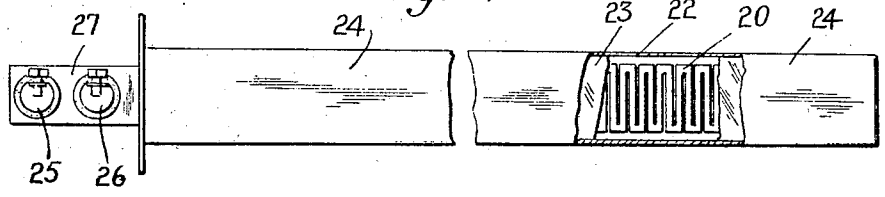


Fig. 3.



WITNESSES

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NEUTRALIZER.

1,163,656. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed October 23, 1913. Serial No. 796,762.

To all whom it may concern:

Be it known that I, WILLIAM S. HADAWAY, Jr., a citizen of the United States, and a resident of New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Neutralizers, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

My invention relates to means for neutralizing or annulling the effect of static electrical charges in belts, paper, cloth and other fabrics as they are manufactured, printed or otherwise mechanically treated or handled.

One object of my invention is to provide a simple and inexpensive means of the aforesaid character for uniformly and effectively neutralizing or annulling the static electric charges therein, without unduly moistening the fabric in which the charges exist.

Another object of my invention is to provide means for producing a transversely extending medium or atmosphere of conducting vapor that shall be adapted to act upon or engage the surface of a moving strip of fabric and to remove static electrical charges therefrom.

Another object is to provide an electric heating device for producing a high temperature relatively dry atmosphere of conducting vapor for the purpose of neutralizing static charges.

Other objects and advantages of my invention will be set forth hereinafter.

Referring to the drawing—Figure 1 is an elevation in longitudinal section of a neutralizer arranged and constructed in accordance with my invention. Fig. 2 is a transverse sectional elevation on the line 2—2 of Fig. 1. A partially sectional elevation of the heating element, which forms a part of the device of Figs. 1 and 2, is shown in Fig. 3. Fig. 4 is a partially diagrammatic view of an electric motor driven apparatus embodying my invention.

10 represents a strip of paper or other fabric in section which may be supported in a well known manner, by tapes 11 only one of which is shown.

My invention is not limited in its field of usefulness, to any specific fabric or any particular art, but is particularly useful in connection with continuous printing presses, since static charges are most frequently found in fabrics which are fed rapidly from a supply roll over guide members of insulating materials, such for example as linen tapes.

The neutralizer of my invention consists in general, of means for producing a transverse atmosphere of conducting vapor which acts as a contactor and is adapted to engage the surface of the paper or other fabric as it travels into the machine from the supply roll.

The device is arranged to not only generate steam very rapidly and economically, but also to accomplish a certain amount of superheating in order that the conducting vapor may be maintained without moistening the fabric to which it is applied, to any appreciable extent, even when the fabric is not moving. It is desirable however, to automatically cut off the supply of energy to the heater whenever the printing press or other machine is stopped. This result may be accomplished by any suitable means as for example, in a motor-driven machine by connecting the heater unit to the motor circuit so that the interruption of the motor circuit or the failure of voltage therein for any cause, stops the flow of energy to the heater. This arrangement is shown diagrammatically in Fig. 4.

I prefer to utilize the structure illustrated in the drawing, which comprises a body of liquid 15 contained in a tank or receptacle 16, an electric heater 17 supported above the liquid and a plurality of wicks 18 which are in contact with the heater and dip into the body of liquid 15. The heater 17 has the general form of a rod or bar and extends over the tank or receptacle transversely of the sheet of fabric 10 in which the electrostatic charges are to be neutralized.

While the specific structure of the heater forms no part of my present invention, I consider the heater illustrated, particularly desirable. This structure comprises a slotted resistance ribbon 20 protected by insulating strips 22 and 23 and disposed within the sheath 24 of sheet metal. The terminals 25 and 26 of the heater are supported by an extension 27 of the sheath and are protected by a cap or casing 28 which is perforated to receive a bushing 29 through which the supply circuit leads may extend.

The heater 17 is above the surface of the body of liquid 15 and is close to the surface of the fabric 10. The wicks do not make contact

with the surface of the fabric, but when electric energy is applied to the resistance element, heat is transferred through the casing to the upper part of the wicks, and the liquid in the wicks is rapidly vaporized. The tank or receptacle 16 is provided with a cover 19 which has a central longitudinal opening 19^a through which the wicks extend, and parallel flange plates 19^b which are close to the wicks and force the steam to pass upwardly from the lower heated portions of the wicks to the upper portions before rising into contact with the fabric. By this means the steam is dried and superheated. Instead of a series of wicks, as shown in the drawings, a single broad wick may be employed or a large number of narrow wicks as desired.

The wicks may be composed of cotton fabric or any other suitable material capable of maintaining a capillary action for continuously conducting the liquid from the body 15 to the heater. In order to avoid accident in case the liquid in the receptacle is inadvertently exhausted, a fire proof material such as asbestos, may be utilized in the construction of the wicks.

While I consider the form of neutralizer illustrated particularly advantageous, I believe it is broadly new to provide a high temperature atmosphere of practically dry conducting vapor in the form of a transverse medium arranged to engage the statically charged surface of the moving body, and I desire that only such limitations be imposed as are indicated in the appended claims.

What I claim is:

1. A body of conducting liquid, an electric heater above the surface of the liquid, and means for conducting the liquid to be vaporized by the heater to produce an atmosphere or medium adapted to act upon a surface of an electro-statically charged moving body.

2. A body of conducting liquid, an electric heater, wicks dipping into the liquid and influenced by the heater to produce an atmosphere or medium of steam, adapted to engage a surface of an electro-statically charged moving body.

3. A neutralizer for electro-static charges comprising a body of liquid, an electric heater supported above the surface of the liquid, a wick dipping into the liquid and arranged to conduct liquid to the heater to be vaporized thereby and means for confining the vapor at the sides of the heated portion of the wick.

4. A neutralizer for electro-static charges comprising a tank or receptacle, a body of liquid therein, an electric heater supported above the surface of the liquid, a wick dipping into the liquid and arranged to conduct liquid to the heater to be vaporized thereby and a cover for the tank or receptacle having a longitudinal slot through which the wick extends and upwardly extending flange plates adapted to confine the vapor at the sides of the heated portion of the wick.

5. A neutralizer for electro-static charges comprising an electric heater, a wick in contact with the heater and arranged to dip into a body of liquid, and means for confining the vapor at the sides of the heated portion of the wick whereby a relatively high temperature conducting atmosphere is produced above the wick.

6. A neutralizer for electro-static charges comprising an electric heater, a wick in contact with the heater and arranged to dip into a body of liquid, and parallel plates arranged adjacent to the heated portions of the wick on the respective sides of the heater for confining the vapor within the influence of the heater.

In witness whereof, I have hereunto set my hand this 22nd day of October, in the year 1913.

WILLIAM S. HADAWAY, Jr.

Witnesses:
G. R. Quimby,
F. B. Graves.