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H. E. EWALT

PAPER SEASONING MACHINE

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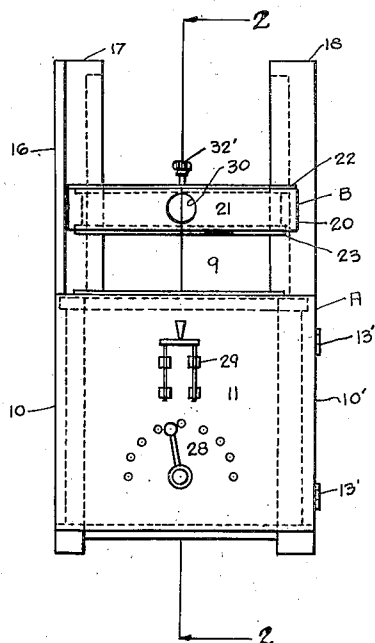


Fig. 1

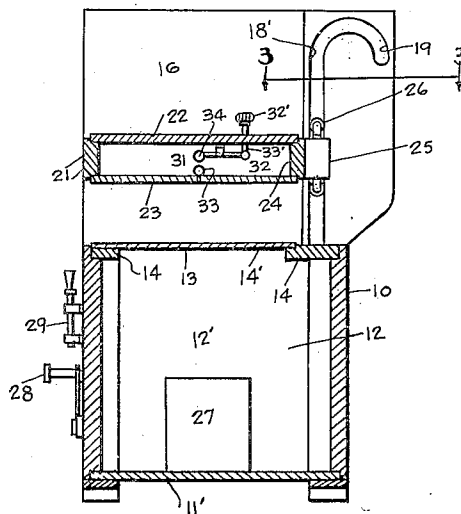


Fig. 2

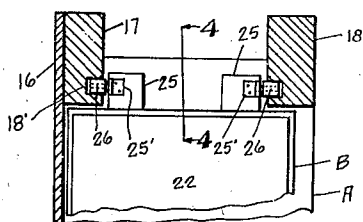


Fig. 3

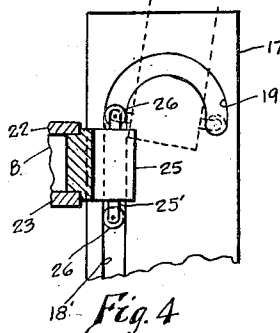


Fig. 4

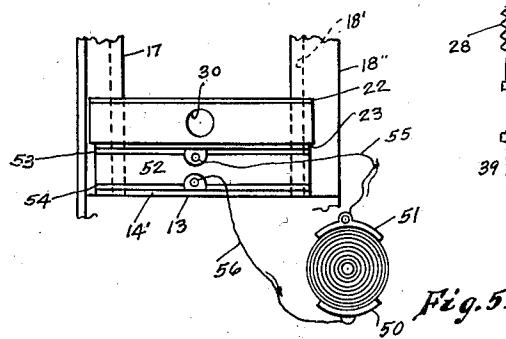


Fig. 5

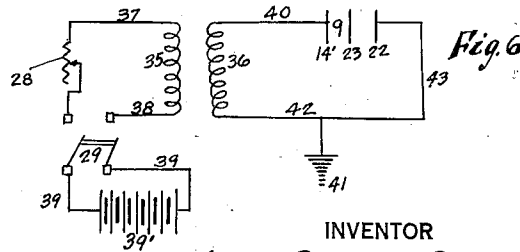


Fig. 6

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PAPER-SEASONING MACHINE.

Application filed February 9, 1925. Serial No. 8,072.

To all whom it may concern:

Be it known that I, HARRY EDWARD EWALT, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Paper-Seasoning Machines, of which the following is a specification.

My invention relates to new and useful improvements in paper seasoning machines and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

Among the salient objects of the invention is the provision of a paper seasoning machine of the character hereinafter described, arranged and adapted to produce a circulation of air around and through paper in roll, sheet or other commercial forms, for the purpose of removing the moisture therefrom and for creating a temperature of the paper best qualified for printing purposes and for cutting into various sizes.

A further object of the invention is the provision of a paper seasoning machine arranged and adapted to receive and support paper of various commercial forms and subject the paper to a curing or seasoning treatment removing statical electricity and other defects caused by atmospheric conditions commonly met with in the printing and paper cutting arts.

A further object of the invention is the provision of a paper seasoning machine arranged and adapted to mature paper, preventing curling, warping or shrinking, preparatory of subjecting the paper to printing ink.

A further object of the invention is the provision of a paper seasoning machine arranged and adapted to mature paper, preventing curling, warping or shrinking, preparatory of cutting the same into various sizes.

A further object of the invention is the provision for treating paper to conditions best suitable for receiving printed matter whereby the ink will not blur, rub or otherwise be defective when the paper is rolled or piled in sheet form immediately after being printed thereon.

A further object of the invention is the provision of a device for curing or seasoning paper of any size, shape or form.

A further object of the invention is the provision of a device arranged and adapted to receive and support paper for the purpose of electrically treating the paper, creating a chemical action whereby the paper will more readily absorb and dry ink received thereon in the usual manner employed in the printer's art.

A further object of the invention is the provision of a device arranged and adapted to electrically treat paper removing all magnetical attraction and statical electricity therefrom.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification and in which,

Fig. 1 is a side elevational view of the invention;

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

Fig. 3 is a sectional view of the same taken substantially on line 3—3 of Fig. 2;

Fig. 4 is an enlarged sectional view of the same taken substantially on line 4—4 of Fig. 3;

Fig. 5 is a fragmentary side elevation of the invention showing a modified form of construction;

Fig. 6 is a diagrammatical view showing a circuit connection embodied in the invention.

Referring to the drawings a paper supporting table is indicated at A and is provided with a cabinet portion 12 formed by walls 10 and 11 and a bottom 11'. The wall indicated at 10' is hinged supported as at 13' affording access to the interior 12' of the cabinet. The top wall of the cabinet is indicated at 13 and comprises members 14 of non-conductive material supporting a metal plate 14' of conductive material the purpose of which will be described hereinafter. The wall portion indicated at 16 extends upwardly from the top 13 and is

joined at right angles by a vertically extending post 17 located opposite and in spaced relations with a similar post 18. The adjacent sides of these posts have vertically extending grooves 18' formed therein terminating at their upper ends into downwardly extending grooves 19.

A box like structure is indicated at B, and includes side walls 20 of non-conductive material having opposite grooves or recesses 21 formed therein in which are mounted, in spaced relation, plate members 22 and 23 of conductive material. The side wall of this structure indicated at 24 has an extended portion 25 carrying oppositely extending roller members 26 which engage the grooves 18', and which are secured in a suitable manner to the portions 25 by supports 25'.

It will be noted that when the roller members enter the grooves 19 the structure B will be held in the position indicated by dotted lines, Fig. 4, therefore allowing free access over the top 13.

The above description is the preferred form construction of the supporting table embodied in the invention and it is this table which carries the elements for treating the paper, which elements will be described in such language as will be best understood by those skilled in the art.

Within the cabinet 12, in the interior 12' thereof I mount in any suitable manner a high frequency transformer 27 of any approved type, said transformer being illustrated diagrammatically. This transformer is controlled by a rheostat 28 of any approved type and the current flowing through the rheostat is controlled by a switch 29 of any approved type, both switch and rheostat being mounted on the wall 11 as shown in Fig. 1.

Referring to Fig. 1, a sight hole is indicated at 30 formed in one of the side walls 20 permitting observation of a spark gap 31 which is mounted with the interior 32 of the structure B. This spark gap comprises a stationary pole 33 carried by the metal plate 23, and an adjustable pole 34 mounted in a suitable manner on the plate 22, and adjustably controlled by an operating knob 32' carried by a shaft 33' connected to pole 34.

These elements above described include the elements for electrically treating paper and are connected in circuit together in the manner illustrated in Fig. 6, a description of which will now be outlined.

Fig. 6 is a diagrammatical view of the circuit connection embodied in the invention and in this illustration the primary and secondary sections of the transformer 27 are indicated at 35 and 36 respectively. The primary section 35 is connected in circuit with one side of the switch 29 and the rheo-

stat 28 by conductor wires 37 and 38 respectively, the other side of the switch being connected in circuit with a suitable electrical current 39' by conductor wires 39. It will be noted that when the switch is closed the current will flow through the rheostat to the primary section of the transformer.

One end of the winding of the secondary section is connected in circuit with the plate 14' by a conductor wire 40, the other end of the secondary section winding being connected in circuit with a suitable ground 41, by a conductor wire 42. This ground 41 is also connected in circuit with plate 22 by a conductor wire 43.

The induction of the current from the primary section to the secondary section causes a current to flow through conductor wire 40 to plate 14', and induced to plate 23 through space 9, which will accommodate a roll or stack of paper for purposes set forth herein, by spark gap 31 to plate 22 and thence to ground 41 through conductor 43 also to which conductor wire 42 terminates, completing the circuit of the secondary section 36.

As herein stated the principal object of the invention is to treat or season paper in any form, by a high frequency current, to best mature the paper for its various commercial uses and the operation of the invention to accomplish these various objects will now be explained.

In placing the paper in space 9 on the supporting table the structure B is elevated until the paper is in place and then this structure is lowered so as to rest upon the paper. In such position it is apparent that the metal plates of the structure B and metal plate 14' are in spaced relation providing the space 9 and that it is necessary that the high frequency current flowing from the secondary section of the transformer to the plate 14' traverse this space to pass through the plates 22 and 23 to ground 41. In doing so the high frequency current passes through the paper and as the current generates heat from the surrounding atmosphere moisture in the paper will be removed therefrom.

Ordinarily printing houses store printing paper in a store room having a temperature less than the room where the paper is put through the press. This being the case it is obvious that the paper coming into contact with a warm atmosphere and warm machinery parts, will have a tendency to curl, warp, or shrink and the paper being in a cool state or condition the ink received thereby will not dry readily after the paper leaves the press. The same defects occur when the paper is put through a cutting machine.

By the provision of a device as herein described the paper being electrically treat-

ed, a chemical action takes place within the paper which remedies the defects enumerated above and many other defects commonly met with in the paper and printing arts.

5 In the operation of the device herein described the paper to be treated is positioned between the plates 14' and 23 in space 9 with structure B supported by the paper. The switch is then closed allowing the current to flow to the primary section of the transformer from the rheostat, the latter being adjusted to obtain the degree of current desired.

10 The current from the primary section leaves the transformer through the secondary section and flows to the plate 14'. From here the current at high frequency is attracted by the spark gap and jumps through the space 9 between 14' and 23 through the space 9 and continues on to the ground. The current in traversing the space 9 passes through and round the paper arranged in said space. In doing this, current heats the atmosphere as well as the paper and in heating the atmosphere an air movement is created and carries off the moisture contained in the paper. The heat from the current removes the statical electricity and magnetic attraction from the paper. After treating the paper it will be found that the paper will take the ink without blurring and as the temperature of the paper has been raised the ink will more readily dry permitting the sheets of paper to be stacked in pile form.

35 By regulating the degree of current traversing the space between the plates the temperature of the paper can be raised to substantially the same temperature of the cutting or press room.

40 From the above description it is apparent that I accomplish the numerous objects of the invention, removing such defects well known by those skilled in the paper and printing arts.

45 In Fig. 5, I have shown a modified form of construction to treat paper in roll form. In this construction I provide two segments 50 and 51 shaped to fit one above the roll of paper and one below the paper. A block 52 is mounted between the plates 14' and 23. This block includes plates 53 and 54 in contact with plates 14' and 23 respectively. Lead wires 55 and 56 connect the segments with plates 50 and 51. The operation of this form is substantially the same as the preferred form with the exception that the current traverses the roll of paper between the segments 50 and 51. In this way I am able to season paper in roll forms as well as paper in sheet forms for purposes herein stated.

55 While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without depart-

ing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of 70 the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device of the class described including a member through which a high frequency current is adapted to pass, said member being adapted to support a stack of paper, a second member in spaced relation with said first member, and means for inducing the current passing through said first member to traverse the space between said members. 75 80

2. A device of the class described including a structural unit provided with a space adapted to accommodate a stack of paper, and means for inducing a high frequency current through said space and said paper. 85

3. A device of the class described including a structural unit having a space adapted to accommodate a stack of paper, means for directing a high frequency current transversely through said space, and means for controlling said current. 90

4. A device of the class described including a structural unit comprising metallic members adapted to be spaced apart to accommodate a stack of paper, and means for inducing a heating agent transversely through said space and paper. 95 100

5. A device of the class described including a structural unit comprising metallic members adapted to be spaced apart to accommodate a stack of paper, means for delivering an electrical current to one of said members, and means carried by the other of said member adapted to attract said current to induce the current to traverse said space. 105

6. A device of the class described including a structural unit comprising metallic members adapted to be spaced apart to accommodate a stack of papers, means for delivering a high frequency current to one of said members, means carried by the other of said members adapted to attract said current to induce the current to traverse said space, and means for regulating the degree of said current. 110 115

7. A device of the class described including a member through which an electrical current is adapted to pass, said member being adapted to receive a stack of paper, a second member mounted for vertical adjustment in spaced relation with said first member adapted to rest upon said stack of paper and adapted to receive said electrical current from said first member. 120 125

8. A device of the class described including a member through which a high frequency current is adapted to pass, said member being adapted to support a stack of paper, a second member in spaced relation with said first member, and means for inducing the current passing through said first member to traverse the space between said members. 130

- quency current is adapted to pass, said member being adapted to receive a stack of paper, a second member mounted for vertical adjustment in spaced relation with said first member adapted to rest upon said stack of paper and adapted to receive said current from said first member, and means for inducing the electrical current to traverse the space between said members.
9. A device of the class described including a member through which a high frequency current is adapted to pass, said member being adapted to receive and support a stack of paper, a second member mounted above said first member and adapted to rest upon said stack of paper and receive the current from said first member, and means carried by said first member adapted to attract said current.
10. A device of the class described including a member through which an electrical current is adapted to pass, said member being adapted to receive and support a stack of paper, a second member supported by said paper above said first member, means for conducting an electrical current to said first member, and means for inducing the electrical current to pass through the stack of paper from said first member to said second member.
11. A device of the class described including a member adapted to support a stack of paper, a vertically adjustable member above said stack of paper, and means for inducing a heating agent through the stack of paper supported by said first member.
12. A device of the class described including a member adapted to support a stack of paper, a vertically adjustable member above said stack of paper, means for conducting a heating agent through the stack of paper supported by said first member, and means for inducing the heating agent to pass from said first member through the stacks of paper to said second member.
13. A device of the class described including a structural unit provided with a space adapted to accommodate a stack of paper, and means for inducing a heating agent to said unit to pass through the stack of paper accommodated by said space.
14. A device of the class described including a structural unit provided with a space adapted to accommodate a stack of paper, means for conducting a heating agent to said unit to pass through the stack of paper accommodated by said space, and means adapted to induce the heating agent to pass through said stack of paper.
15. A device of the class described including a structural unit providing a cabinet having a top wall of conductive material, an electrical element within the cabinet adapted to induce an electrical current at high frequency to said top wall, and a structural unit in spaced relation with said top wall and provided with conductive members adapted to receive said current.
16. A device of the class described including a structural unit providing a cabinet having a wall of conductive material, an element within the cabinet adapted to induce an electrical current at high frequency to said top wall, a structural unit adapted to be positioned in spaced relation with said top wall and be charged with said current, and elements with said second named unit adapted to attract said current to said unit.
17. A device of the class described including a structural unit providing a cabinet having a top wall of conductive material, an electrical element within the cabinet adapted to induce an electrical current to said top wall, and a structural unit in spaced relation with said top wall and provided with conductive members adapted to receive said current.
18. A paper seasoning machine including a unit provided with a space adapted to receive and support a stack of paper, a second structural unit above said first unit supported by the paper received by said first unit, means for inducing a heating agent to said first unit, and means for inducing said heating agent to pass through and around said paper to said second unit from said first unit.
19. The method of treating paper for printing purpose consisting of supporting a stack of paper between members electrically charged.
20. The method of treating paper for printing and cutting purpose consisting of supporting a stack of paper between space members and inducing a heating agent through the space and the paper to remove the static electricity and magnetic charge therefrom.
21. The method of seasoning paper consisting of subjecting the paper to an electrical current at high frequency.
22. The method of seasoning paper consisting of arranging a stack of paper between members charged with a high frequency current.
23. A paper seasoning machine including a cabinet having upwardly extended spaced members with oppositely located grooves formed therein, and including a top wall of conductive material, an element within the cabinet adapted to induce a heating agent to said top wall, a structure located above said top wall having portions formed of conductive material and provided with portions working within the grooves permitting elevation of said structure, and elements carried by said structure adapted to attract said agent to the conductive portions.
24. A paper seasoning machine including a cabinet having upwardly extended spaced

members with oppositely located grooves formed therein, and including a top wall of conductive material, an element within the cabinet adapted to induce a high frequency current to said top wall, a structure located above said top wall having portions formed of conductive material and provided with portions working within the grooves permitting elevation of said structure, and elements carried by said structure adapted to attract said current to the conductive portions. 10

In testimony whereof I have signed my name to this specification.

HARRY EDWARD EWALT.