C. F. PEASE.

COMBINED PRINTING, WASHING, AND DRYING MACHINE.

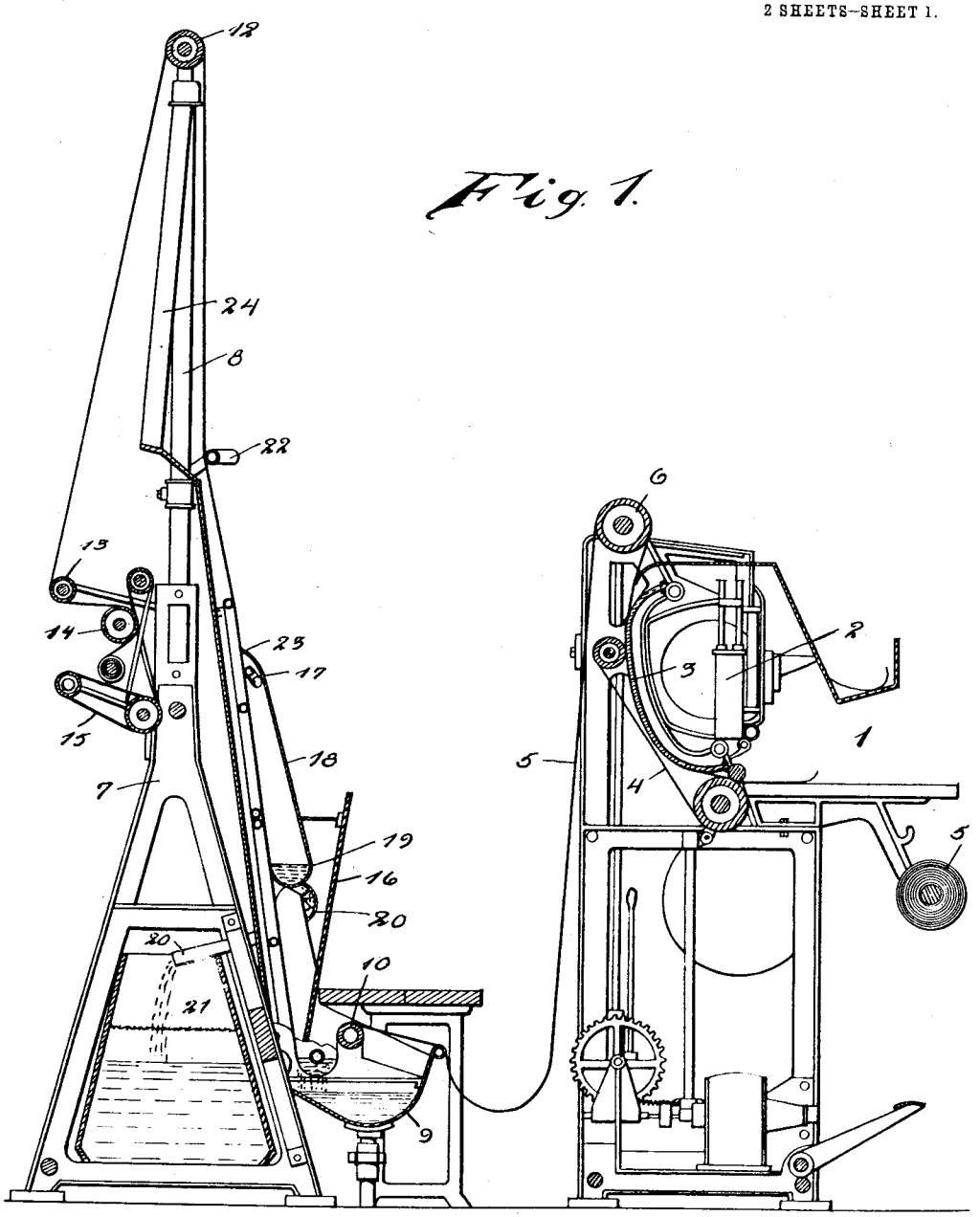
APPLICATION FILED MAY 1, 1912.

1,067,372.

Patented July 15, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



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Witnesses

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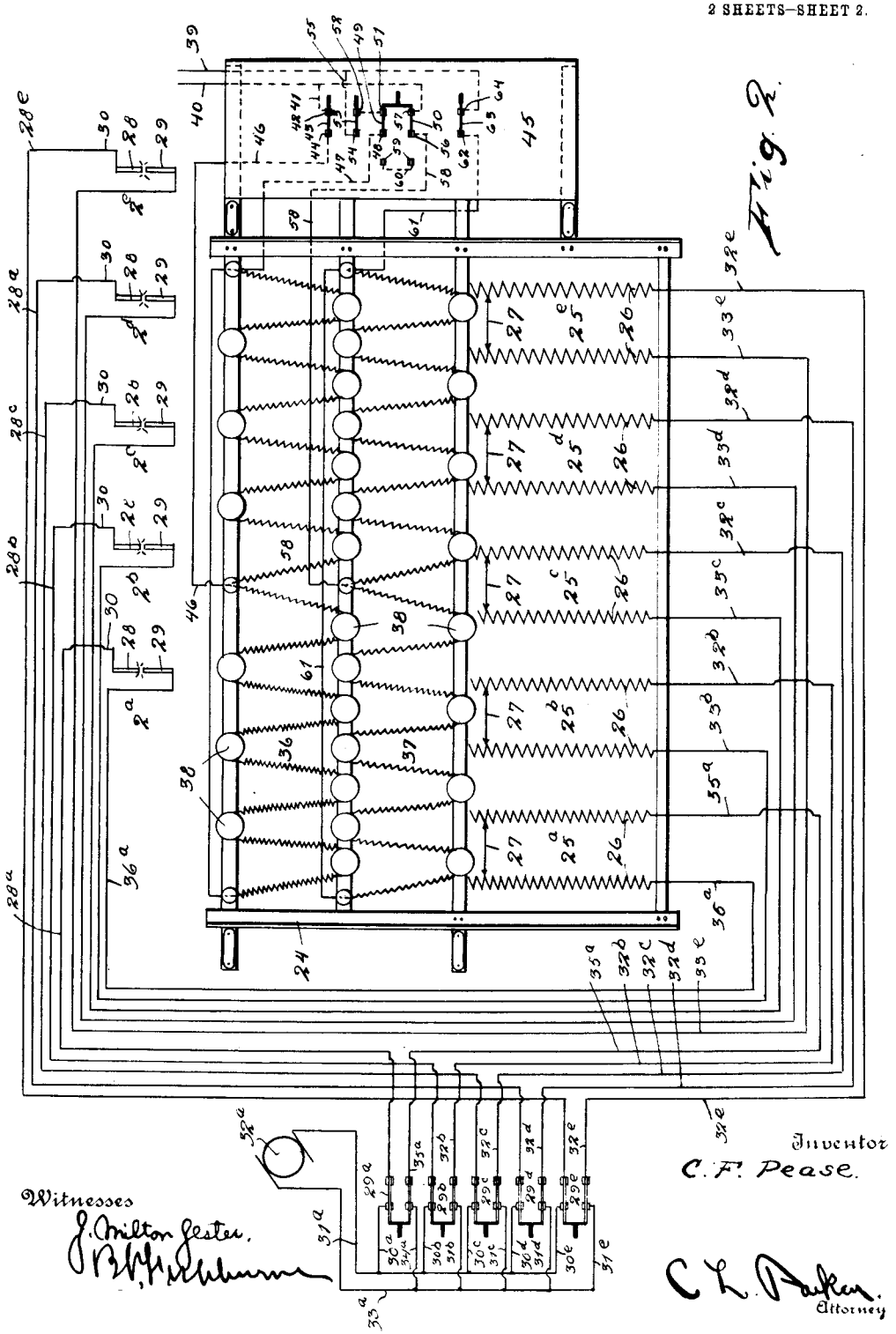


Fig. 2.

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UNITED STATES PATENT OFFICE.

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COMBINED PRINTING, WASHING, AND DRYING MACHINE.

1,067,372. Specification of Letters Patent. Patented July 15, 1913.

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To all whom it may concern:

Be it known that I, CHARLES F. PEASE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Combined Printing, Washing, and Drying Machines, of which the following is a specification.

My invention relates to a photographic machine, wherein the heating or drying apparatus is connected in a novel manner with the source of light included in the machine.

An important object of this invention is to provide in a machine of the above mentioned character heating means including rheostat or rheostats that are electrically connected with the electric lamp or lamps of the printing machine, thus making said rheostats serve a double purpose and economizing in space and material.

A further object of my invention is to provide drying apparatus of the above mentioned character, which may be manipulated to supply different degrees of heating for drying a sheet of fibrous material passing in proximity to the apparatus, the different degrees of heating being required to suit the various speeds at which the said sheet may be passing about the drying apparatus.

A further object of the invention is to provide novel means for cutting selected sets of rheostats and lamps into and out of circuit.

A further object of this invention is to provide drying apparatus, which is simple in construction, reliable in operation, and easy to manipulate.

Other objects and advantages of this invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a vertical sectional view through a combined printing and washing machine, showing my drying apparatus applied to the washing machine, and, Fig. 2 is a diagrammatic view of the circuits employed in the apparatus.

In the drawings wherein is illustrated a preferred embodiment of my invention, the numeral 1 designates a printing machine as a whole, comprising a suitable number of arc lamps 2 disposed in proximity to a transparent printing plate 3. Operating in engagement with the printing plate 3 is a paper feeding means 4. The sensitized paper 5 travels upwardly about the printing plate 3 and over a roller 6. It is thought that no further detailed description of the printing machine is necessary to illustrate the present invention.

Disposed near and in the rear of the printing machine, is a washing machine comprising a frame-work 7, to the upper end of which are attached vertical posts 8. The sensitized paper 5 passes through a water collecting receptacle or trough 9, such paper engaging a roll 10, as shown. The paper 5 then travels upwardly, as shown, and engages a roller 12, carried at the upper end of the posts 8. The sensitized paper now passes downwardly upon the opposite side of the posts 8 for engagement with rollers 13 and 14 and below the roller 14 this paper is rewound by engagement with an endless belt 15, operated by suitable means.

The numeral 16 designates a splash guard, disposed, as shown.

The numeral 17 designates a potash solution spray disposed within the upper portion of a shield 18 having the shape in vertical cross-section, as shown. The lower portion of the shield 18 is in the form of a collecting trough 19, having connection with a return pipe 20, discharging into a potash solution tank 21. Disposed above the potash solution spray is a water spray pipe 22, which discharges water upon the surface of the paper 5, such water being deflected by the upper end 23 of the shield 18 and flowing over the same to be discharged downwardly into the collecting trough 9.

Connected with the posts 8 and disposed in proximity to and between the sections of the paper 5, is the drying apparatus, comprising a rectangular frame 24, having suitable connection with said posts. Suitably mounted in the lower portion of this frame are a plurality of rheostats 25^a, 25^b, 25^c, 25^d and 25^e, each of which includes heating or resistance coils 26, and a movable contact element 27, as shown.

The electric or arc lamps 2 are illustrated diagrammatically in Fig. 2 and are there

designated by the numerals 2^a, 2^b, 2^c, 2^d and 2^e, and comprise carbons 28 and 29. Connected respectively with carbons 28 of the lamps 2^a, 2^b, 2^c, 2^d and 2^e are wires 28^a, 28^b, 28^c, 28^d and 28^e, as shown. The wire 28^a is connected with one blade of a two pole switch 29^a, adapted to make and break electrical connection with a wire 30^a, having electrical connection with a common feed wire 31^a, which in turn is electrically connected with a source of current 32^a. The opposite pole of this source of current is connected with a common return wire 33^a, as shown. The other blade of the switch 29^a is adapted to make and break electrical connection with a wire 34^a, having connection with the common return wire 33^a. Connected with this blade is a wire 35^a, which has electrical connection with the right coil 26 of the rheostat 25^a. The left coil 26 of the rheostat 25^a has electrical connection with a wire 36^a, which is connected with the carbon 29 of the lamp 2^a. The wire 28^b has electrical connection with one blade of a two pole switch 29^b, which is adapted to make and break electrical connection with a wire 30^b, having electrical connection with the common feed wire 31^a. The other blade of the switch 29^b is adapted to make and break electrical connection with a wire 31^b, which has electrical connection with the common return wire 33^a. Connected with this blade is a wire 32^b, which has electrical connection with the right coil 26 of the rheostat 25^b. Connected with the left coil 26 of the rheostat 25^b is a wire 33^b, having electrical connection with the carbon 29 of the lamp 2^b. The wire 28^c is connected with one blade of a two pole switch 29^c adapted to make and break electrical connection with a wire 30^c, having connection with the common feed wire 31^a. The opposite blade of the switch 29^c is adapted to make and break electrical connection with a wire 31^c, having connection with the return wire 33^a. Connected with this blade is a wire 32^c, having connection with the right coil 26 of the rheostat 25^c. The left coil 26 of the rheostat 25^c is connected with a wire 33^c, which is connected with the carbon 29 of the lamp 2^c. The wire 28^d is connected with one blade of a two pole switch 29^d adapted to make and break electrical connection with a wire 30^d, having connection with the feed wire 31^a. The other blade of the switch 29^d is adapted to make and break electrical connection with a wire 31^d, which is connected with the wire 33^a. Connected with this blade is a wire 32^d, which is connected with the right coil of the rheostat 25^d. The left coil 26 of the rheostat 25^d is connected with a wire 33^d, which is connected with the carbon 29 of the lamp 2^d. The wire 28^e is connected with one blade of a two pole switch 29^e, which is adapted to make and break electrical connection with a wire 30^e, having electrical connection with the wire 31^a. The other blade of this switch 29^e is adapted to make and break electrical connection with a wire 31^e, having connection with the wire 33^a. Connected with this blade is a wire 32^e having connection with the right coil of the rheostat 25^e. Connected with the left coil of the rheostat 25^e is a wire 33^e, having connection with the carbon 29 of the lamp 2^e. It is thus seen that the rheostat and arc lamp in each set are connected in series and that by opening or closing selected switches, such sets of lamps and rheostats may be cut out of or into circuit.

It is sometimes necessary to provide other heating means in addition to the rheostats, and I have accordingly provided upper and lower sets of heating or resistance coils 36 and 37. The coils in each of these sets are suitably mounted on insulators 38 and such coils in each set are connected in series, as shown. The numerals 39 and 40 designate common feed and return wires for the sets of heating coils 36 and 37. Connected with the wire 40 is a wire 41, which is connected with a stationary contact 42 of a switch, comprising a swinging blade 43 having electrical connection with a contact 44. This switch is supported by a plate or base 45 formed of insulating material and rigidly connected with the frame 24. Connected with the contact 44 is a wire 46, having electrical connection with the middle coil of the set 36, as shown. The numeral 47 designates a wire having connection with a contact 48 and connected with the end coils of the set 36, as shown. The contact 48 is included in a two pole switch comprising swinging blades 49 and 50, rigidly connected, as shown. The blade 49 serves to connect and disconnect contact 48 with a contact 51, having electrical connection with a contact 52 engaged by a swinging blade 53, having electrical connection with a contact 54, which is connected with the feed wire 39 by a wire 55. The swinging blade 50 serves to connect contacts 56 and 57, said contact 57 being connected with the wire 40 and said contact 56 with a wire 58. The blades 49 and 50 may be swung into engagement with contacts 59, which are electrically connected by a wire 60. The wire 58 is connected with the middle coil of the set 37. Connected with the end coils of this set is a wire 61, which is connected with a contact 62, connected with a swinging blade 63, adapted to engage and disengage a contact 64, having electrical connection with the feed wire 39.

The operation of the device is as follows:—Assuming that all of the switches controlling the arc lamps are opened except switch 29^a, current will flow from one side of the source of current 32^a, through wire 31^a, wire 30^a, wire 28^a, carbon 28 of lamp 2^a,

carbon 29, wire 36ª, the left coil 26 of rheostat 25ª, contact 27, right coil 26 of the same, wire 35ª, the opposite blade of the switch 29ª, wire 34ª and through the return wire 33ª, back to the source of current. It is obvious that by closing the other switches the remaining sets of lamps and rheostats may be connected in circuits, which circuits are similar to the one hereinbefore traced and therefore need not be further described.

When the heating coils 36 and 37 are operated in addition to the rheostats, either set of the coils 36 and 37 may be employed alone, or may be connected in series or in parallel, by means of the switches hereinbefore described. When it is desired to have a low heat, the sets of coils 36 and 37, are connected in series. The sets of coils 36 and 37 are connected in series by placing blade 43 in engagement with contact 42, disconnecting blade 53 and contact 52, swinging blades 49 and 50 into engagement with contacts 59 and placing blade 63 in engagement with contact 64. Current will now flow from the feed wire 39, through blade 63, wire 61, the set of coils 37, the common return wire 58, blade 50, contact 59, wire 60, other contact 59, blade 49, wire 47, the set of coils 36, the common return wire 46, blade 43, wire 41, and back to wire 40. When it is desired to use the top set of coils 36, alone, blade 43 is placed in engagement with the contact 42, blade 53 in engagement with contact 52, and blades 49 and 50 in engagement with contacts 51 and 57, respectively, and blade 63 disengaged from contact 64. Attention is called to the fact that the blades 49 and 50 are not electrically connected together but are rigidly connected with insulating means. When this circuit is closed current flows from the wire 39, through wire 55, blade 53, contact 51, blade 49, wire 47, through the coils 36, through common return wire 46, blade 43, wire 41, and back to the wire 40.

When it is desired to use the lower set of coils 37, blade 43 is disengaged from contact 42, blade 53 disengaged from contact 52, blades 49 and 50 placed in engagement respectively, with contacts 51 and 57, and blade 63 placed in engagement with contact 64. In the circuit thus closed current will flow from the wire 39, through blade 63, wire 61, coils 37, common return wire 58, blade 50, and back to wire 40.

When it is desired to obtain a high heat both sets of coils 36 and 37 are connected in parallel, which is accomplished by placing contact 42 in engagement with blade 43, blade 53 in engagement with contact 52, blades 49 and 50 in engagement respectively with contacts 51 and 57, and blade 63 in engagement with contact 64. In the circuits thus closed, current will flow from the wire 39, through wire 55, blade 53, blade 49, contact 48, wire 47, coils 36, common return wire 46, blade 43, and wire 41 back to wire 40. Current also flows from wire 39, through blade 63, contact 62, wire 61, coils 37, common return wire 58, contact 56, blade 50, contact 57, and back to the wire 40. It is thus seen that means are provided whereby the heating apparatus in addition to the rheostats 25 may be manipulated, whereby such heating apparatus will give different degrees of heat. These different degrees of heat are required to suit the various speeds that the paper or cloth may be passing about the drying apparatus.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that certain changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. In apparatus of the character described, the combination with a printing machine including an electric lamp, of means for applying a solution to the paper after leaving the printing machine, a heating device including a rheostat electrically connected with the electric lamp, and means to cause the wet paper to travel in proximity to said heating device.

2. In apparatus of the character described, the combination with a printing machine including a plurality of arc lamps, of means for applying a solution to the paper after it leaves the printing machine, a heating device including a plurality of rheostats corresponding in number to and electrically connected with said arc lamps, and means to effect the travel of the wet paper in proximity to said heating device.

3. In apparatus of the character described, the combination with a printing machine including a plurality of arc lamps, of means for applying a solution to the paper after it leaves the printing machine, a heating device including a plurality of rheostats corresponding in number to and electrically connected with said arc lamps, an additional heating device disposed near the first named heating device, means whereby said additional heating device may give out different degrees of heat, and means to effect the travel of the wet paper in proximity to said heating device.

4. In apparatus of the character described, the combination with the arc lamps of a printing machine, of means for applying a solution to the paper after it leaves the printing machine, a heating device including a plurality of rheostats electrically connected with said arc lamps, an additional electrical heating device disposed near the

first named heating device, and means to effect the travel of the wet paper in proximity to said heating device.

5. In apparatus of the character described, the combination with a plurality of sets, each of which comprises an arc lamp of a blue print machine and a rheostat electrically connected therewith, of means for applying a solution to the sensitized paper after leaving the printing machine, a drying device including the rheostats and paper feeding means, a source of current, and switches for independently connecting and disconnecting the sets into and out of circuit with the source of current.

6. In apparatus of the character described, the combination with a printing machine including an electric lamp, of a heating device including a rheostat connected in circuit with the electric lamp, and means to cause the paper to travel in proximity to the heating device after leaving the printing machine.

7. In apparatus of the character described, the combination with a printing machine including an electric source of light, of an electric heat generating device connected in circuit with the electric source of light, means to properly wash the paper after leaving the printing machine, and means to effect a travel of the paper in proximity to the heat generating device.

8. In apparatus of the character described, the combination with a printing machine including an electric source of light, of a supporting structure disposed suitably near and in the rear of the printing machine, an electric heat generating device connected in circuit with the electric source of light, and means to pass the paper in proximity to said heat generating device.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES F. PEASE.

Witnesses:
C. A. GREEN,
W. J. WRIGHT.