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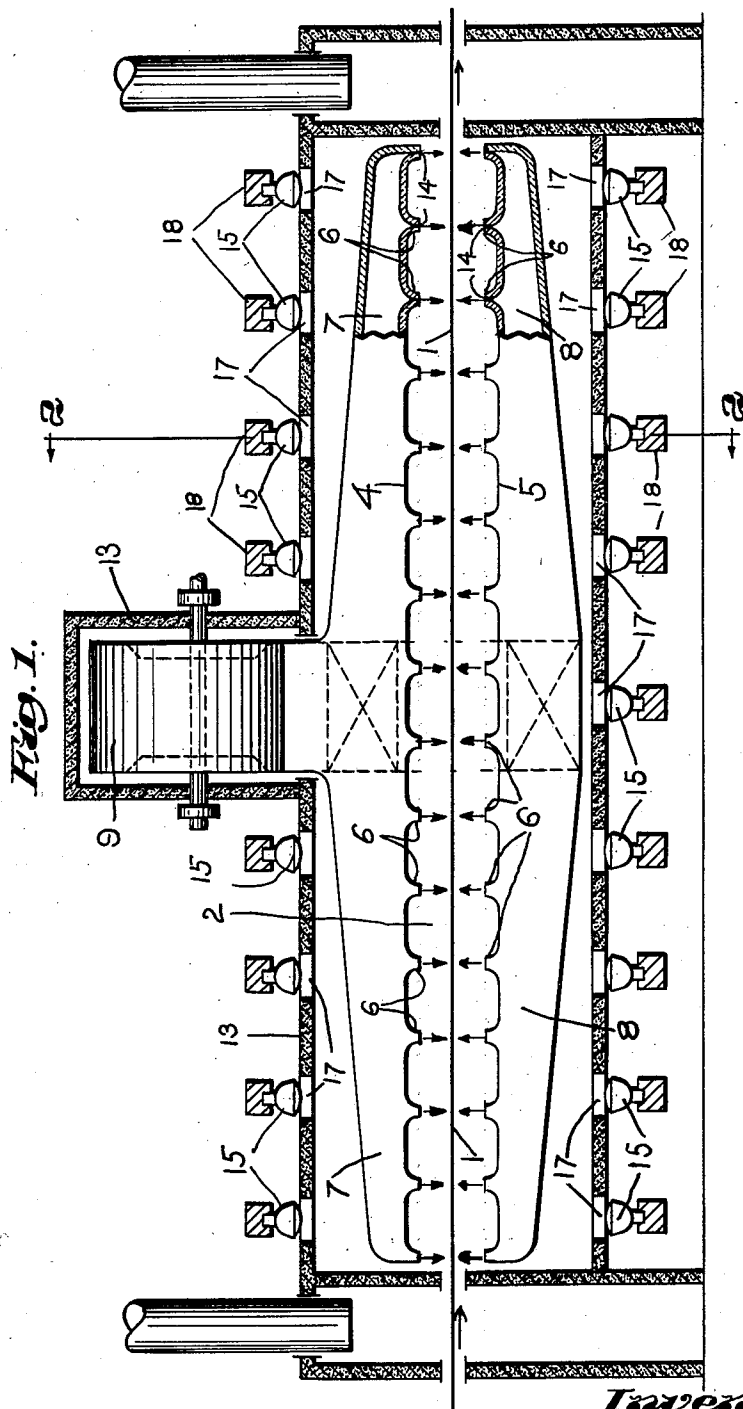
B. R. ANDREWS

2,391,764

DRYING APPARATUS

Filed Nov. 18, 1944

2 Sheets-Sheet 1



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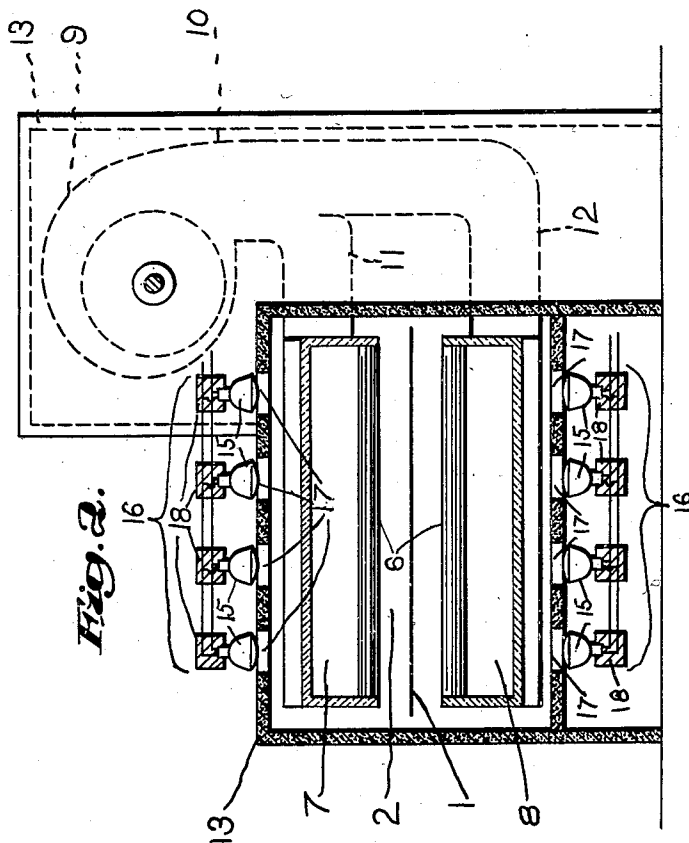
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UNITED STATES PATENT OFFICE

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DRYING APPARATUS

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5 Claims. (Cl. 34—68)

This invention relates to drying apparatus of that type which uses both radiant heat and circulating air currents for effecting the drying operation.

In drying cloth or other material in sheet or web form, it is common practice to feed the cloth or web material through a drying space, one wall of which is provided with nozzle elements by which air under pressure is directed against the web material, and it is to a drying apparatus of this type that the present invention is particularly directed.

One object of the invention is to provide an improved way of transmitting the radiant heat to the web material while it is being subjected to the circulating air currents, this being done by making the wall having the nozzle elements of a material that is transparent to radiant heat, that is, material through which radiant heat will readily pass with minimum loss by absorption and by placing the radiant heat generating means behind said wall or on the opposite side thereof from that on which the cloth or other web material is located so that the radiant heat will be transmitted through the wall and thereby projected on to the web of cloth or material.

Other objects of the invention are to provide various other improvements in drying apparatus of this type as will be more fully hereinafter set forth.

In the drawings:

Fig. 1 is a sectional view through a drying apparatus embodying my invention.

Fig. 2 is a section on the line 2—2, Fig. 1.

As stated above the embodiment of the invention herein illustrated is a drying apparatus for drying cloth or other material in web form, such cloth or web material being indicated at 1.

The apparatus herein illustrated is provided with a drying space 2 through which the cloth is fed by any suitable means, which drying space is defined by two opposed walls 4 and 5, one or both of which may be provided with nozzle elements 6 adapted to deliver air under pressure against the cloth 1. In the specific form of the invention illustrated in the drawings, both the walls 4 and 5 are thus provided with the nozzle elements 6. These walls 4 and 5 which define the drying space 2 may conveniently constitute walls or sides of ducts or chambers 7, 8 into which air under pressure is delivered by some suitable means such for instance as a fan or blower 9, which is illustrated as having its discharge 10 connected to the ducts 7 and 8 by suitable conduits 11 and 12.

The drying space 2 is shown as open at its ends and also at its sides and said ducts are also illustrated as enclosed in a housing 13 which also encloses the blower 9. The inlet or suction opening of the blower 9 communicates with the interior of the housing 13 and therefore there will be a recirculation of the air which is delivered from the nozzles 6.

Each nozzle 6 is herein shown as provided with a nozzle slot 14 which extends transversely of the web material 1 and the nozzles are shown as being spaced from each other in the lengthwise direction of the ducts 7, 8.

The apparatus herein illustrated also involves radiant heat generating elements adapted to generate radiant heat and project it against the cloth 1 while it is subjected to the action of the circulating air currents, and in the present embodiment of the invention these radiant heat generating elements are situated behind the ducts 7, 8 or on the opposite side thereof from that on which the cloth 1 is located, and the walls of the ducts are made of material which is transparent to radiant heat, that is, material through which radiant heat will readily pass, glass being one example of such material.

Any suitable means for generating radiant heat may be employed and as illustrative of one such means, I have herein shown a plurality of so-called infra red electric lamps 15 which are designed to emit radiant waves that are below the visible spectrum and which are in the nature of heat waves. The radiant heat which is thus generated by these lamps 15 passes through the walls of the ducts 7, 8 and is projected on to the cloth 1 thereby heating the latter while it is being subjected to the circulating air currents. This radiant heat serves to raise the temperature of the cloth to a point at which the moisture therein will be rapidly evaporated and the water vapor thus produced is rapidly carried off by the circulating air currents.

These infra red lamps 15 may be mounted in any suitable way. I have herein shown them as arranged in banks 16, each bank of lamps comprising a row of lamps extending transversely to the duct or parallel to the nozzle slots.

These lamps can be arranged inside of the housing 13 back of the ducts 7, 8 or they can be placed outside of the housing as shown in the drawings and the latter may be provided with an opening or window 17 which registers with each lamp and through which the radiant heat is projected.

I will preferably use infra red lamps having

mechanical bases so that they can be mounted in any ordinary socket receptacles 18.

While I have suggested glass as being a suitable material to use for the walls of the ducts 7 and 8, yet I do not wish to be limited to the use of glass, as any material which is transparent to radiant heat may be used without departing from the invention.

I claim:

1. A drying apparatus having a duct, two opposed walls of which are formed of material through which radiant heat will readily pass, one of said walls being formed with a plurality of slots extending transversely of the length of the duct, means supporting the material to be dried adjacent said wall of the duct, means to deliver gaseous drying medium under pressure to said duct and through said slots against the said material, and means located on the opposite side of the duct from the material to generate radiant heat and project it through the duct on to said material.

2. A drying apparatus having a duct, two opposed walls of which are formed of material through which radiant heat will readily pass, one of said walls being formed with a plurality of slots extending transversely of the length of the duct, means supporting the material to be dried adjacent said wall of the duct, means to deliver gaseous drying medium under pressure to said duct and through said slots against the said material, and infra-red lamps located on the opposite side of the duct from the material to be dried and operating to generate radiant heat and project it through the opposed walls of the duct on to said material.

3. A drying apparatus comprising two parallel ducts forming between them a drying space through which web material to be dried passes, the wall of each duct adjacent the web material

as well as the opposite wall of each duct being formed of material through which radiant heat will readily pass, the first named wall of each duct having a plurality of nozzle openings directed toward the web material to be dried, means to deliver gaseous drying medium under pressure to each duct and through the nozzle openings thereon against the web material, and radiant heat generating means located outside of each duct and on the side thereof opposite to that facing the web material whereby radiant heat generated by said radiant heat generating means and projected through the opposed walls of each duct on to the web material.

4. A drying apparatus having a duct, the walls of which are formed of material through which radiant heat will readily pass, one of said walls being formed with a plurality of nozzle openings, means supporting the material to be dried adjacent said wall of the duct, means to deliver air under pressure to said duct and through said nozzle openings against the web material, and means located on the opposite side of said duct from the web material to generate radiant heat and project it through the walls of said duct on to said material.

5. A drying apparatus comprising two parallel ducts forming between them a drying space through which the web material to be dried passes, the walls of said ducts being formed of material through which radiant heat will readily pass, each duct having a plurality of nozzle openings directed toward the web material to be dried, means to deliver air under pressure to each duct and through said nozzle openings against said web material, and radiant heat generating means located on the backside of each duct operative to generate radiant heat and project it through the walls of said ducts on to said web material.

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