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R. A. HAYWARD
PAPER WAXING APPARATUS

Filed May 24, 1926

2 Sheets-Sheet 1

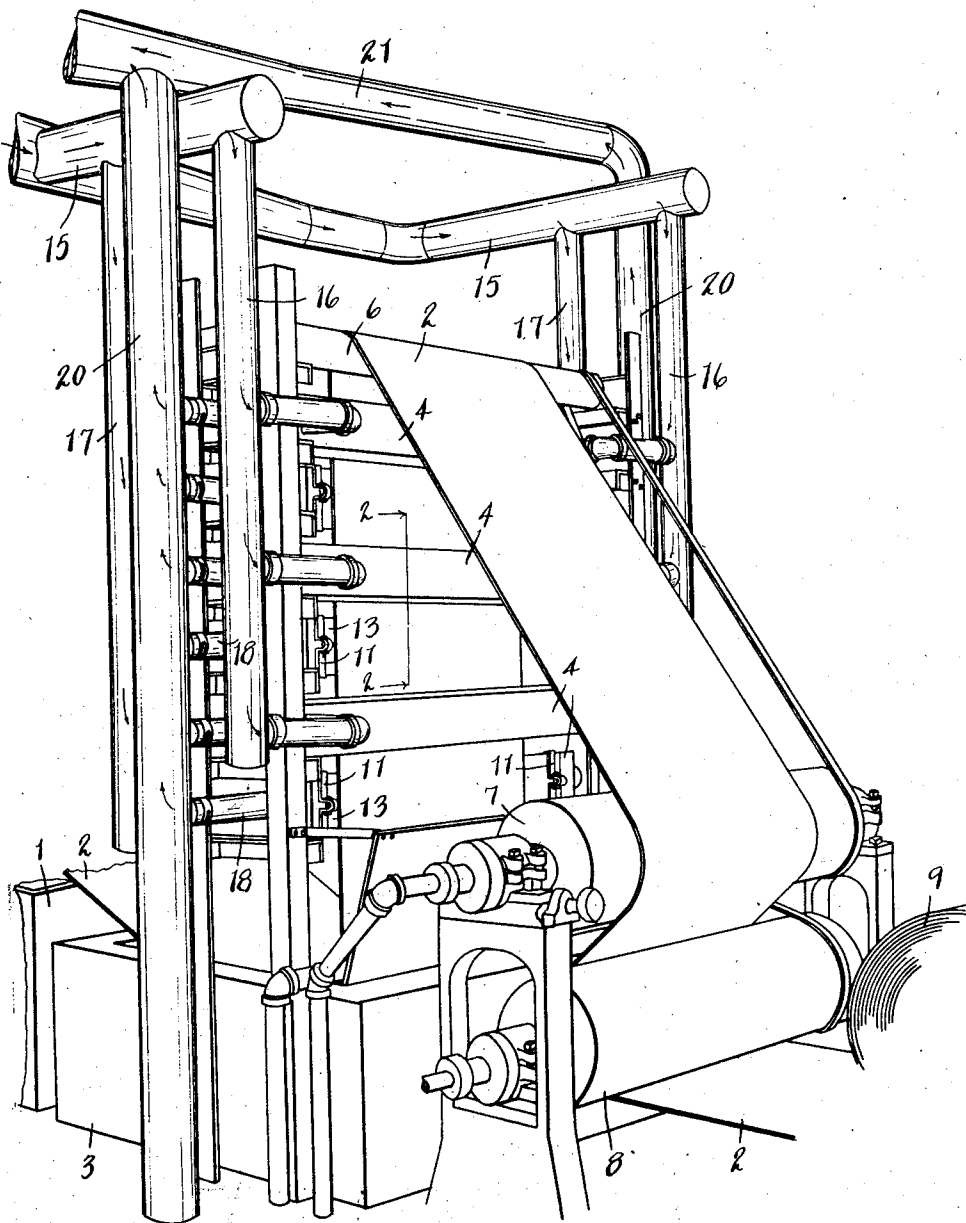


Fig. 1

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2 Sheets-Sheet 2

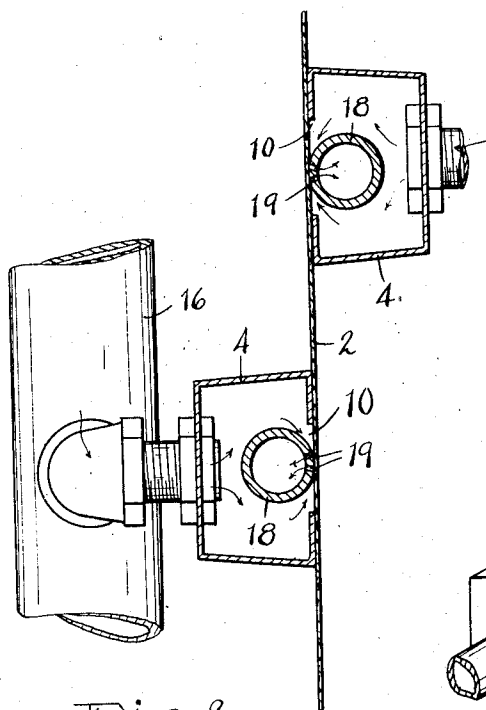


Fig. 2

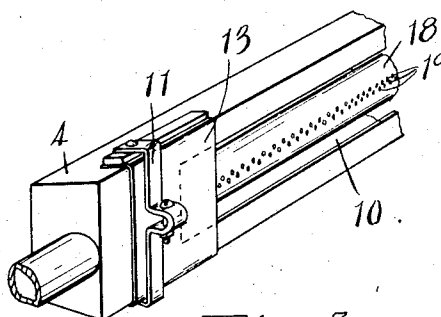


Fig. 3

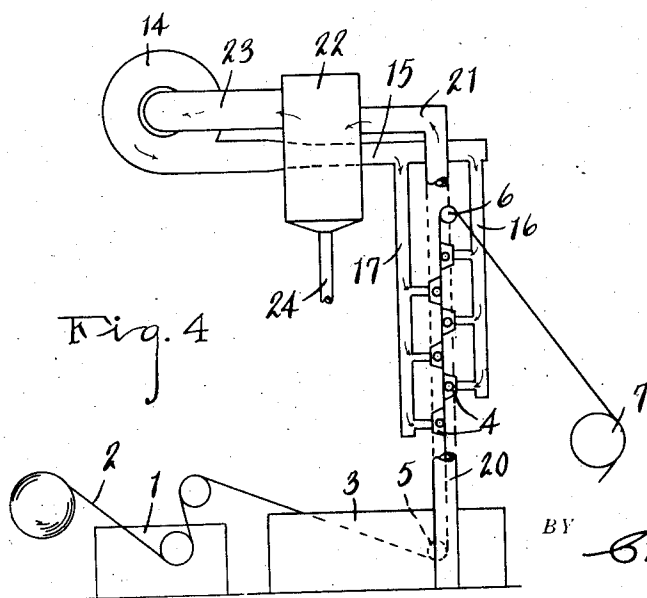


Fig. 4

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PAPER-WAXING APPARATUS.

Application filed May 24, 1926. Serial No. 111,293.

The main objects of this invention are:

First, to provide an improved paper waxing machine which may be operated at high speed and at the same time the cooling water effectively removed from the waxed paper.

Second, to provide in a paper waxing machine an improved means for removing the cooling water from the waxed paper which is very efficient and at the same time the paper and the coating apparatus is not subjected to undue friction.

Third, to provide an improved apparatus of the class described which is very durable and requires relatively little attention.

Objects pertaining to details and economies of my invention will definitely appear from the detailed description to follow. The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing forming a part of this application, in which:

Fig. 1 is a fragmentary perspective view of my improved paper waxing apparatus, certain parts being shown conventionally for convenience in illustration.

Fig. 2 is an enlarged detail vertical section on a line corresponding to line 2—2 of Fig. 1.

Fig. 3 is a fragmentary front perspective view of one of the pressure or blower heads.

Fig. 4 is a side elevation of my improved paper waxing apparatus, the parts being mainly shown conventionally.

Referring to the drawing, 1 represents a wax applying means consisting in general of a tank or receptacle adapted to contain heated wax or paraffin and means for directing the web of paper indicated at 2 through this apparatus to apply a coating of hot paraffin thereto.

From the paraffin applying means the web of paper is directed into a cooling tank 3 where it is subjected to a bath of cooling fluid, preferably water.

The wax applying means and cooling means, specifically considered, form no part of this invention and I therefore have not illustrated or described the same in detail herein, practical apparatus for this purpose being well-known in this art. My present improvements relate particularly to means

for removing the water from the paper after it has passed through the cooling bath.

To this end I provide a plurality of elongated box-like blower or pressure heads 4 which are arranged in a vertical series in opposed alternating relation so that the web of paper 2 passes across the same from the roller 5 to a suitable guide roller 6. From the guide roller 6 the web passes to the chilling rolls 7 and 8 and thence to the winding roll 9. The pressure heads have openings 10 in their faces, the web of paper constituting closures for these head openings.

However, to accommodate varying widths of webs I provide the heads with closure members designated generally by the numerals 11 having shutters 13 of flexible material, preferably rubber or the like, which may be adjusted to complement the paper in closing the head openings.

The pressure heads are connected to the blower 14 by means of the pipe 15 and the header pipes 16 and 17. Within each blower head is an exhaust pipe 18 having openings 19 in the faces thereof, preferably in the form of a series of small perforations, although slits or kerfs may be employed with satisfactory results. These exhaust pipes are preferably connected to headers 20 and these headers are connected to a pipe 21 which is connected to a separating chamber 22, the separating chamber in turn being connected to the intake 23 of the blower 14. A waste pipe 24 is provided for the separating chamber.

With the parts thus arranged, air is delivered under pressure to the blower or pressure heads 4 and escapes therefrom through the openings in the faces of the exhaust pipes so that there is a blast of air rushing across the surface of the paper carrying with it the water on the surface of the paper, the air and water being carried away by these exhaust pipes.

By supplying the air under pressure to the pressure heads the paper is prevented from coming into sealing contact with the exhaust pipe openings 19, the paper, however, being held by the tension thereon in close relation thereto. This enables the passing of air at high velocity across the surface of the paper, effectively wiping up and carrying away the water and preventing un-

due friction on the paper and on the parts of the apparatus. This arrangement enables the web of paper being run at a very high rate of speed and at the same time effectively removes the water.

I have illustrated and described my improved apparatus in a form which I have found highly satisfactory. I have not attempted to illustrate and describe certain modifications and adaptations which I contemplate as I believe the disclosure made will enable those skilled in the art to embody or adapt my improvements as may be desired.

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

1. An apparatus for removing water from paper comprising a blower, a series of blower heads connected to said blower and having elongated openings in the faces thereof, said heads being arranged in alternating relation on opposite sides of the path of the paper; means for supporting and driving a web of paper so that it is carried across the openings in the faces of the heads and constitutes a closure therefor, flexible closure members for said head openings adjustably mounted to supplement the web in closing the head openings, exhaust pipes having vent openings in their faces disposed within said heads with their faces positioned so that the web travels across the same, and a connection for said exhaust pipes to the intake of the blower, said connection having a separating chamber therein.

2. An apparatus for removing water from paper comprising a blower, a series of blower heads connected to said blower to receive air under pressure therefrom and having elongated openings in the faces thereof, means for supporting and driving a web of paper so that it is carried across the openings in the faces of the heads and constitutes a closure therefor, exhaust pipes having openings in their faces disposed within said heads with their faces positioned so that the web travels across the same so that the air delivered to said heads is exhausted through said exhaust pipes in contacting relation to said web, and a connection for said exhaust pipes to the intake of the blower, said connection having a separating chamber therein.

3. An apparatus for removing water from paper comprising a blower, a series of blower heads connected to said blower and having elongated openings in the faces thereof, means for supporting and driving a web of paper so that it is carried across the openings in the faces of the heads and constitutes a closure therefor, flexible closure members for said head openings adjustably mounted to supplement the web in closing the head openings, exhaust pipes having openings in their faces disposed within said

heads with their faces positioned so that the web travels across the same, and a connection for said exhaust pipes to the intake of the blower, said connection having a separating chamber therein.

4. An apparatus for removing water from paper comprising a blower, a series of blower heads connected to said blower to receive air under pressure therefrom and having elongated openings in the faces thereof, means for supporting and driving a web of paper so that it is carried across the openings in the faces of the heads and constitutes a closure therefor, exhaust pipes having openings in their faces disposed within said heads with their faces positioned so that the web travels across the same so that the air delivered to said heads is exhausted through said exhaust pipes in contacting relation to said web, and a connection having a separating chamber therein.

5. An apparatus for removing water from paper comprising a blower, a series of blower heads connected to said blower to receive air under pressure therefrom and having elongated openings in the faces thereof, means for supporting and driving a web of paper so that it is carried across the openings in the faces of the heads and constitutes a closure therefor, and exhaust pipes having openings in their faces disposed within said heads with their faces positioned so that the web travels across the same so that the air delivered to said heads is exhausted through said exhaust pipes in contacting relation to said web.

6. An apparatus for removing water from webs of paper or the like comprising a blower, a plurality of pressure heads having openings in the faces thereof arranged so that a web of paper traveling across the faces thereof constitutes a closure means for the head openings, exhaust pipes arranged longitudinally within said heads with their faces in approximately the plane of the faces of the heads, and connections for the exhaust pipes to the intake of said blower whereby air under pressure is forced from said heads into said exhaust pipes.

7. An apparatus for removing water from webs of paper or the like comprising a blower, a plurality of pressure heads connected to said blower to receive air under pressure and having openings in the faces thereof arranged so that a web of paper traveling across the faces thereof constitutes a closure means for the head openings, and exhaust pipes arranged longitudinally within said heads with their faces in approximately the plane of the faces of the heads so that the air delivered to said heads is exhausted through said exhaust pipes in contacting relation to said web.

8. An apparatus for removing water from paper and the like comprising a blower, a

head connected to the blower to receive air under pressure therefrom and having an opening in the face thereof across which the web is carried so that the web constitutes a closure therefor, an exhaust pipe disposed longitudinally within said head so that the web travels across the same so that the air delivered to said heads is exhausted through said exhaust pipes in contacting relation to said web, and a connection for said exhaust pipe to the intake of the blower.

9. An apparatus for removing water from paper and the like comprising a pressure head having an opening in the face thereof across which the web is carried so that the web constitutes a closure therefor, a flexible supplemental closure member for said opening whereby it may be adjusted to varying widths of paper webs, an exhaust pipe disposed longitudinally within said head so that the web travels across the same, and an exhaust means for said exhaust pipe.

10. An apparatus for removing water from paper and the like comprising a pressure head having an opening in the face thereof across which the web is carried so that the web constitutes a closure therefor, means for supplying air under pressure to said pressure head, an exhaust pipe disposed longitudinally within said head so that the web travels across the same so that the air delivered to said heads is exhausted through said exhaust pipes in contacting relation to said web, and an exhaust means for said exhaust pipe.

11. An apparatus for removing water from webs of paper or the like comprising a pressure head having an opening in the face thereof across which the web is carried, an exhaust pipe having an opening in the face thereof disposed so that the web of paper is in close proximity thereto as it is carried across the head, and means for supplying air under pressure to said head where-

by a blast of air is directed against the surface of the web and into said exhaust pipe and the sealing of the openings in the exhaust pipe by the web is prevented and the water carried into the exhaust pipe.

12. An apparatus for making waxed paper comprising a blower, a series of blower heads connected to said blower to receive air under pressure and having openings in the faces thereof arranged on opposite sides of the path of the web so that the web is carried across the openings of the heads, exhaust pipes having openings in their faces disposed within said blower heads so that the air and the moisture are exhausted therethrough and the web of paper travels in close proximity to said openings in said exhaust pipe, and a connection for said exhaust pipes to the intake of the blower, said connection having a separating chamber therein.

13. An apparatus for making waxed paper comprising a blower, a series of blower heads connected to said blower to receive air under pressure and having openings in the faces thereof arranged on opposite sides of the path of the web so that the web is carried across the openings of the heads, and exhaust pipes having openings in their faces disposed within said blower heads so that the air and the moisture are exhausted therethrough and the web of paper travels in close proximity to said openings in said exhaust pipe.

14. An apparatus for waxing paper comprising a pressure head having an opening in the face thereof, means for supporting the web of paper so that it travels across said head, an exhaust pipe having an opening in the face thereof disposed within said head so that the web of paper is in close contact therewith, and means for applying air under pressure to said head.

In witness whereof I have hereunto set my hand.

RALPH A. HAYWARD.