

H. BRAUNHOLD.

APPARATUS FOR DRYING PAPER.

No. 177,196.

Patented May 9, 1876.

Fig. 1.

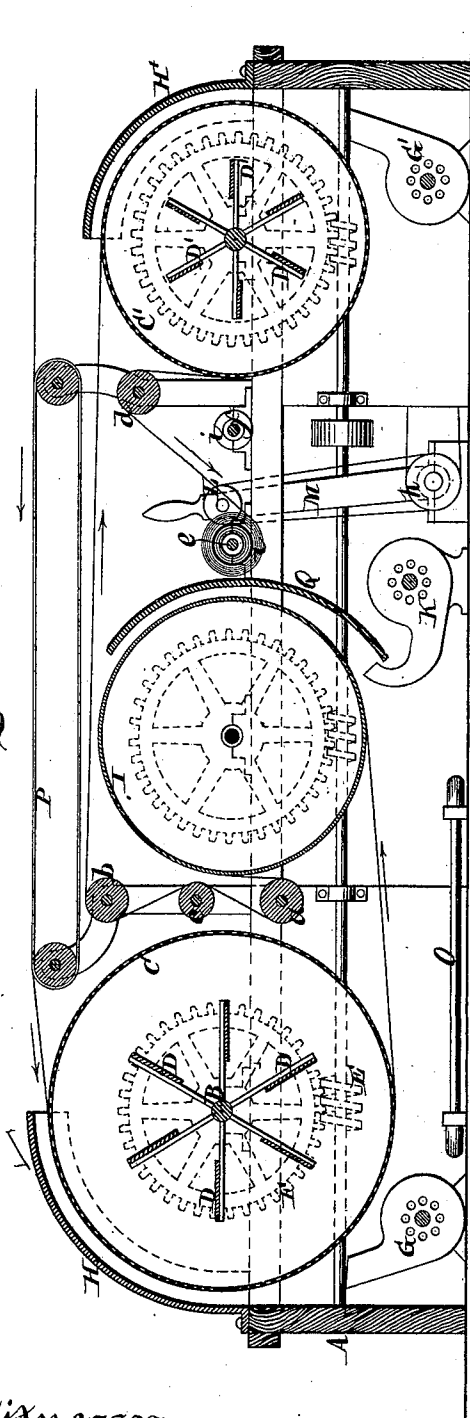
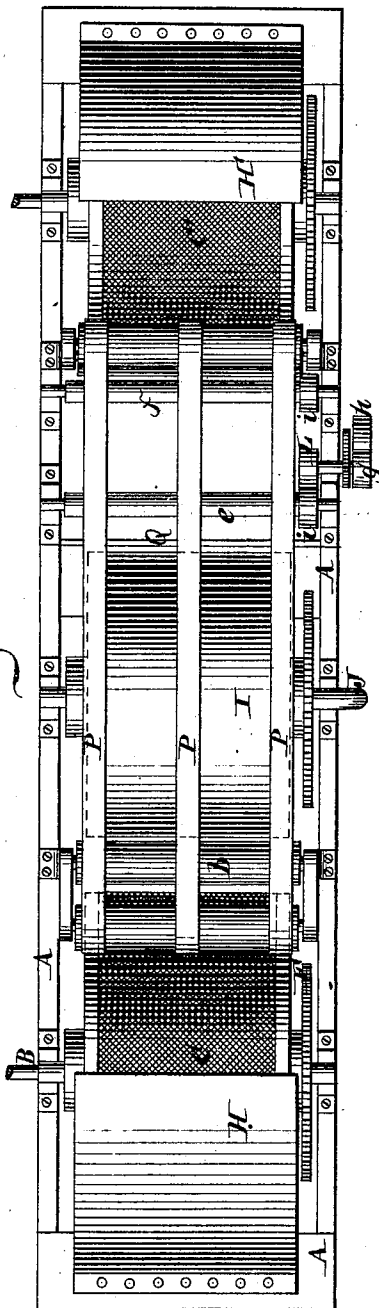


Fig. 2.



Witnesses.

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IMPROVEMENT IN APPARATUS FOR DRYING PAPER.

Specification forming part of Letters Patent No. **177,196**, dated May 9, 1876; application filed April 6, 1876.

To all whom it may concern:

Be it known that I, HENRY BRAUNHOLD, of the city, county, and State of New York, have invented a new and Improved Apparatus for Drying Paper and other materials, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal section of my apparatus. Fig. 2 is a plan view thereof.

Similar letters indicate corresponding parts.

My improved apparatus is especially adapted to drying stained or fancy paper, but is applicable, also, to drying muslin and various other materials of a similar nature. It consists in combining, with the foraminous drum and its internal revolving fan, a fan-blower or other air-forcing device, which is so arranged with relation to the drum that a current of air can thereby be directed over the circumference of the drum, so as to drive off the vapors rising from the paper or other material in the process of drying, while such fan-blower also assists in drying. It consists, also, in combining, with the foraminous drum and its concomitant parts, a heating-cylinder, which is so arranged as to receive the paper or other material after it has passed over the foraminous drum, its effect being to thoroughly remove all moisture that may remain in the paper after its passage over the drum. With the heating-cylinder is also combined a fan-blower, for the purpose of driving off vapors and to assist in drying.

In the drawing, the letter A designates the frame of my apparatus, forming the bearing, among others, for a shaft, B, on which is mounted a foraminous drum, C. I prefer to make the circumference of this drum of wire-gauze. The drum is mounted loosely on the shaft B, while to the shaft are secured the blades of a fan, D, the fan being secured to that part of the shaft situated internally of the drum. The foraminous drum C and the fan D are thus rendered susceptible of being revolved in opposite directions. For the purpose of imparting a revolving motion to the foraminous drum, I have used, in this example, a worm, E, which engages a worm-wheel, F, secured to the drum. The fan D may be revolved in like manner to the drum, or in

any other suitable manner. Beneath the foraminous drum C is situated a fan-blower, G, which is arranged to direct a current of air over the circumference of the drum. This current of air is spread over a large part of the drum, or made to pass round it by the action of a deflector, H, which is bent over and parallel to the drum, or nearly so, and secured to the frame A, as clearly shown. Next the foraminous drum C is placed a heating-cylinder, I, which is mounted on hollow gudgeons having their bearings in the frame A, and to one of which gudgeons is connected a pipe, J, by which steam or hot air may be admitted to the cylinder for the purpose of heating it. Beneath this heating-cylinder I is placed a fan-blower, K, similar to the blower G, such blower K being arranged to blow round the circumference of the heating-cylinder, which, to this end, is provided with a deflector, Q. A revolving motion may be imparted to the heating-cylinder I in like manner to the foraminous drum by a worm and worm-wheel, as indicated in the drawing.

In some cases I arrange a system of heating-pipes, O, on the floor of my apparatus, between the heating-cylinder I and the foraminous drum C, for the purpose of preparing the paper or other material for the heating-cylinder.

In the present example of my invention I have duplicated the foraminous drum C and its concomitant parts, as shown, C' designating the secondary drum; D', its internal revolving fan; G', the secondary fan-blower; and H', the deflector, by which the current of air produced by this blower G' is spread over the surface of the secondary drum. The heating-cylinder I is thus situated between two drums, by which the paper or other material to be dried is cooled both before and after it passes over the heating-cylinder.

The operation of my machine is as follows: The strip of paper or other material is first conducted round the foraminous drum C; thence round the heating-cylinder I, and over guide-rollers *a b* and a tension-roller, *c*, arranged between the heating-cylinder and the foraminous drum. From the guide-roller *b* the paper is conducted to the secondary foraminous cylinder C', (in case the latter is

used,) round which it is passed to a guide-roller, *d*, whence it is drawn on a winding-roller, *e*.

I prefer to use two winding-rollers, as shown, *f* being the secondary winding-roller, so that when one of these rollers has received the proper length of paper the latter may be cut and allowed to wind on the other roller. A revolving motion may be imparted to either of the winding-rollers *e f* by means of a friction-wheel, *L*, which is carried by a lever, *M*, and on whose shaft is mounted a pulley, *g*. (See Fig. 2.) The lever *M* swings on a shaft, *N*, on which is mounted a pulley, *h*.

It is obvious that if a revolving motion is given to the pulley *h* through suitable driving-power, and this pulley is connected with the pulley *g* by a suitable belt, the friction-wheel *L* partakes of such motion; and if the same is brought in frictional contact with a pulley, *i*, secured to the respective winding-rollers, the latter are revolved.

It may be remarked that, instead of the several air-forcing devices herein described, air-pumps of suitable construction may be employed.

With the machine, which I have in this example represented, is combined a carrier, *P*, in the form of an endless apron, for the purpose of feeding the paper or other material to

the foraminous drum *C*, the object of this carrier being to prevent sagging of that portion of the material between the foraminous drum and the place from whence the material is taken.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the foraminous drum and its internal revolving fan, of an air-forcing device, arranged in relation to the drum, for driving a current of air over the circumference of the drum, for driving off the vapors arising from the material being dried, substantially as set forth.

2. The heating-cylinder *I*, combined with the foraminous drum *C* and its internal revolving fan, substantially as described, and for the object specified.

3. The combination of a fan-blower, *K*, with the heating-cylinder *I*, the foraminous drum *C* and its internal revolving fan, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 27th day of March, 1876.

H. BRAUNHOLD. [L. S.]

Witnesses:

W. HAUFF,

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