G. D. KILBERRY.

PAPER DRYING DEVICE.

APPLICATION FILED APR. 30, 1915.

1,203,010.

Patented Oct. 31, 1916.

Fig. 2.

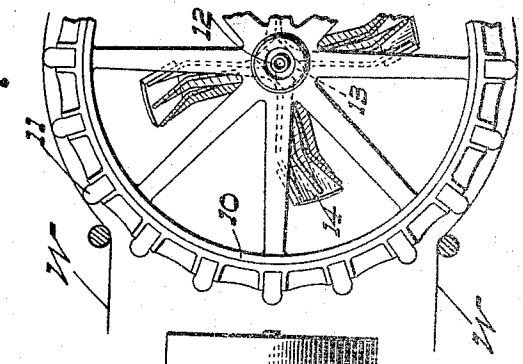
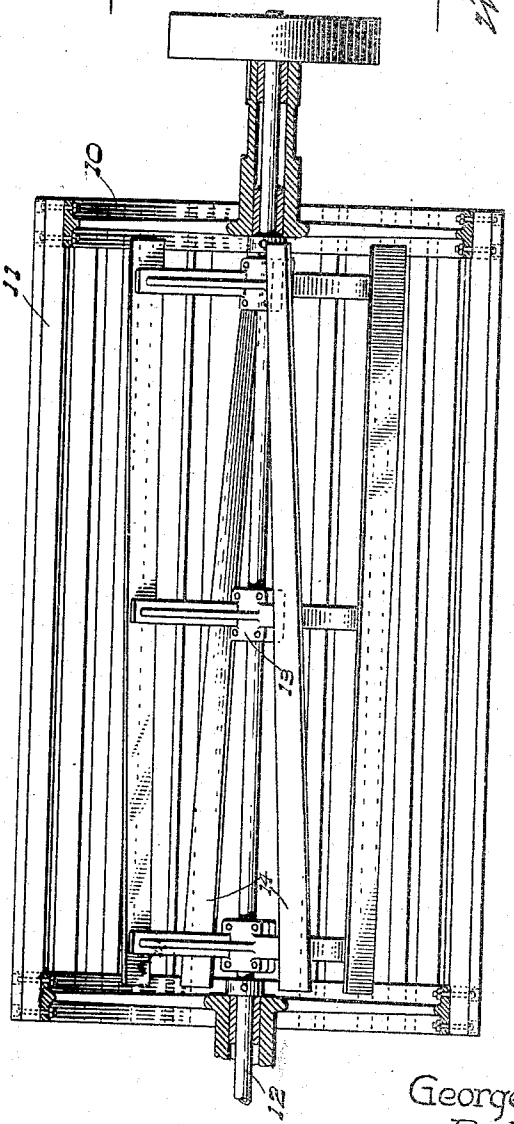


Fig. 1.



Inventor:
George D. Kilberry.
By Attorneys.
Southgate & Southgate

THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE D. KILBERRY, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO RICE, BARTON & FALES MACHINE & IRON COMPANY, A CORPORATION OF MASSACHUSETTS.

PAPER-DRYING DEVICE.

1,203,010. Specification of Letters Patent. Patented Oct. 31, 1916.

Application filed April 30, 1915. Serial No. 25,025.

To all whom it may concern:

Be it known that I, GEORGE D. KILBERRY, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Paper-Drying Device, of which the following is a specification.

This invention relates to a device for drying paper and particularly to the air drying type.

The principal object of the invention is to provide means whereby not only will the air be forced against the paper as it passes through the machine and over the drying drum, but instead of simply being churned within the drum the air will be drawn in in a constant stream from one end. Thus fresh dry air is constantly being used instead of air that has taken up moisture from the paper.

Another feature of the invention is the simplicity of the arrangement by which this result is obtained.

The invention can be applied to a single drum, or multiple drum, drier.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is an end view of a drying drum constructed in accordance with this invention, and Fig. 2 is a central longitudinal sectional view of the same.

In the air drying type of machine, the web of paper W passes over each drum 10 which is provided with a series of metal covered wooden slats 11. Ordinarily, when any means is provided for assisting the circulation of the air within the drum, it is in the form of flat perfectly radial blades rotating within the drum for forcing the air against the inner side of the web while on the drum. The only effect of this is to churn up the air and to constantly deliver the air over and over against the web. Of course, some of the air escapes, but it is found in practice that the air within the drum gets constantly moister and moister.

The shaft 12 is rotatable independently of the drum in either direction. On it are supported a series of spiders 13 having arms on which are placed longitudinal vanes 14. These vanes are arranged at a slight angle to radial planes to cause them to force air outwardly as the drum rotates. The vanes are securely fastened to the arms and set up on the shaft. Then the spider at one end is fixed to the shaft and the spider at the other end is turned a convenient distance. This distance in the case of a drum having a diameter of about fifty inches would be about six inches. Then this spider is secured to the shaft and also the central one. This warps the thin wooden blades 14 and gives them a helical, or, as it is ordinarily termed, a spiral formation. All the blades are of course moved around at the same end and in the same direction. The result of this is that when the shaft is rotated in the proper direction the air will be thrown against the inner surface of the web which is supported on the slats, and will also be forced along in the drum longitudinally. In this way air is drawn in at one end of the drum and forced out of the other constantly, although in its passage along the interior of the drum it is forced against the web one or more times. This results in a constant change of the air within the drum and prevents the air which receives moisture from the web from being used over and over again. In this way the drying operation takes less time and the expense of the equipment is not increased over the ordinary forms which are in common use.

Although I have illustrated and described only a single form of the invention and shown it as applied only to a particular type of drying drum, I am aware of the fact that the invention can be carried out in modified forms and applied to other types of drums without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited in these respects, but

What I do claim is:

1. In a paper drying machine, the combination of a drum having spaced longitudinal slats for supporting the web, a shaft therein to which the drum is fixed, a plurality of spiders on the shaft having arms, and a series of vanes fixed to the spiders slant-

ingly located with respect to radial planes, the spider at one end being located on the shaft out of registration with that at the other end.

2. As an article of manufacture, a revolving paper drying drum having longitudinal slats for supporting a web and provided with helical blades therein fixed to rotate with the drum for drawing air in at one end and expelling it at the other.

In testimony whereof I have hereunto set my hand.

GEORGE D. KILBERRY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."