

H. J. MEDBERY, H. A. MANN, Jr. & S. H. DRAKE.

STEAM DRYING WHEELS.

No. 171,523.

Patented Dec. 28, 1875.

Fig. 1.

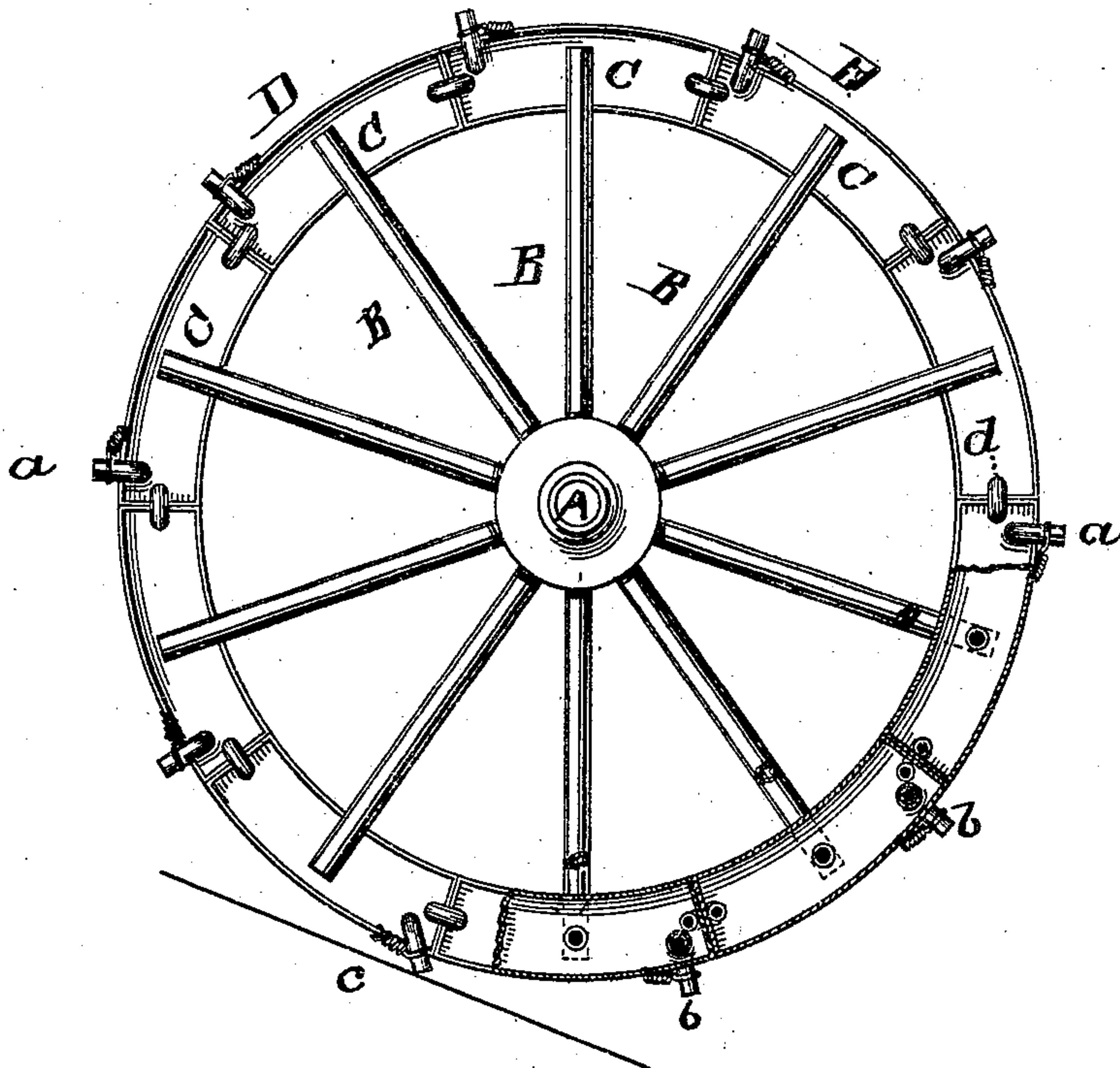
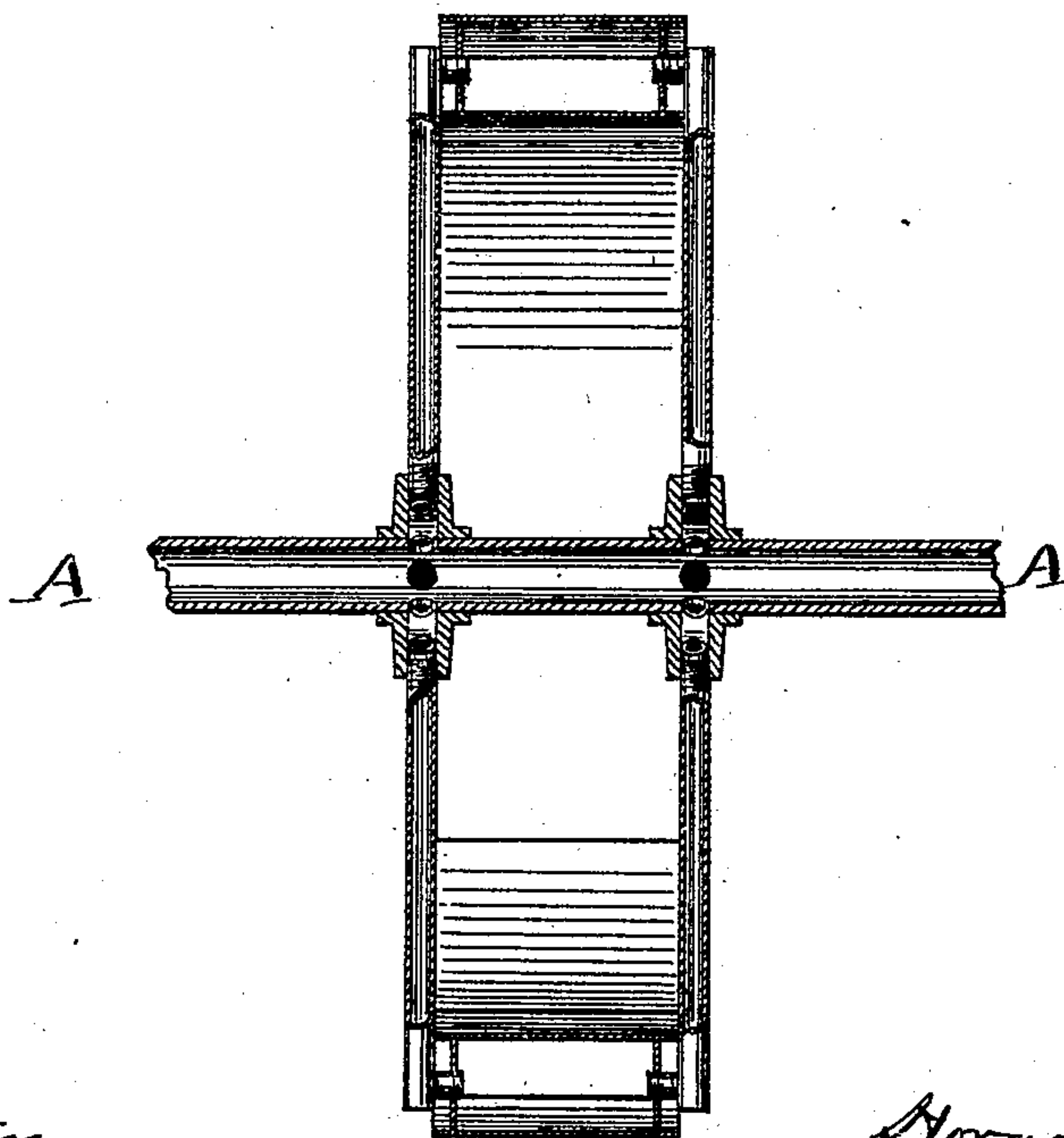


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN STEAM DRYING-WHEELS.

Specification forming part of Letters Patent No. **171,523**, dated December 28, 1875; application filed
July 8, 1875.

To all whom it may concern:

Be it known that we, HORACE J. MEDBERY, HENRY A. MANN, Jr., and SIMEON H. DRAKE, all of Ballston Spa, in the county of Saratoga and State of New York, have invented a certain new and useful Improvement in Steam Drying Wheels or Cylinders, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of our invention is to overcome difficulties that are inherent in other machines for drying cloth, paper, and other materials. Those difficulties may be illustrated as follows: In permanently uniting long rolls or strips of paper and cloth, intended to be manufactured into collars, cuffs, shipping-tags, and other articles, by means of paste, glue, gum, or other adhesive matter, it has been usual to employ a series of small drying-cylinders, (one machine having as many as nineteen such cylinders,) over all of which the material to be dried is required to pass from one cylinder to another in process of drying, either directly or else over intermediate rolls, in either of which cases both sides of the material are brought into contact with the rolls or cylinders before it can be sufficiently dried. If the united material pass from one cylinder to another before being dried, the inevitable expansion of the paper and shrinkage of cloth cause them to separate between the cylinders, and they do not properly unite after having been once so separated. Another objection is this: the small rolls used raise the fiber of cloth, thereby making it impossible to give the fineness of finish oftentimes desired in cotton and linen fabrics. This objection is strikingly manifest in the case of wall-papers or other fabrics requiring a nice finish or design on the surface side. An idea had existed that if a cylinder could be constructed with a drying-surface sufficiently large to dry the material at one operation, without the necessity of a series of cylinders, it would be very advantageous, saving, and convenient; but it was found that if such a large cylinder could be made to work at all it would be so expensive to construct, and so costly on account of the

enormous consumption of steam in heating it, that it could not be profitable.

Well knowing these difficulties, and after much study and reflection, and expenditure of money in purchasing machinery which did not meet our wants, we made the invention hereinafter described, whereby we have overcome the said difficulties, as is constantly demonstrated by the actual operation of the machine embodying the same.

The main feature of our invention is a drying-wheel of great diameter, the peripheral rim or outer part of which is built in sections or separate steam-chests, although, for the purpose of maintaining an equal pressure of steam, they are connected by small pipes. By means of said wheel, throughout the outer rim of which the steam for heating it is uniformly distributed, we give more drying-surface than can be obtained in any other machine in use, at the same cost of construction; and it consumes less steam than any other steam drying-machine of the same amount of drying-surface in use, where the steam is admitted at one end of the shaft and discharged at the other.

Figure 1 is a side view of our steam-heated drying-wheel. Fig. 2 is a front view of the same.

The same letters denote the same parts in each of the drawings.

A is the tubular center shaft, into both ends of which the steam is admitted and introduced into the tubular radial arms B. The said shaft is supported on suitable bearings, as must be obvious to any person skilled in the art to which this invention appertains, without the necessity of an illustrated drawing. From hubs upon the said shaft radiate tubular arms, connecting with the steam-chests C, which constitute segments of the drying-wheel D. Each steam-chest or segment has attached to it a vacuum-valve, *a*, held in contact with its seat by a spring, which valve admits steam through the end of the arm B into the steam-chest.

As the wheel revolves, the nozzle *b* strikes an inclined plane, *c*, and, pressing the nozzle inward, opens the valve, and thus permits a

discharge of the condensed or surplus steam, preferably into a trough containing water, so arranged as to prevent a waste of available steam, the spring causing the valve to close after being released from contact with the inclined plane. A short U-shaped pipe, *d*, by conducting steam from one steam-chest to another, assists in equalizing the pressure of steam throughout the entire periphery of the wheel, and thereby preserves the same temperature in all the sections of the drying-surface.

Having fully described our invention, sufficiently to enable those skilled in the art to operate it, what we claim as our invention, and

desire to secure by Letters Patent, is as follows:

A drying-wheel having a hollow periphery, composed of several sections or steam-chambers, substantially as and for the purpose described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HORACE J. MEDBERY.
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Witnesses:

H. F. CARY,
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