(No Model.)

J. MANDOT.

ROTARY DRYING CYLINDER.

No. 533,960. Patented Feb. 12, 1895.

Fig. 1

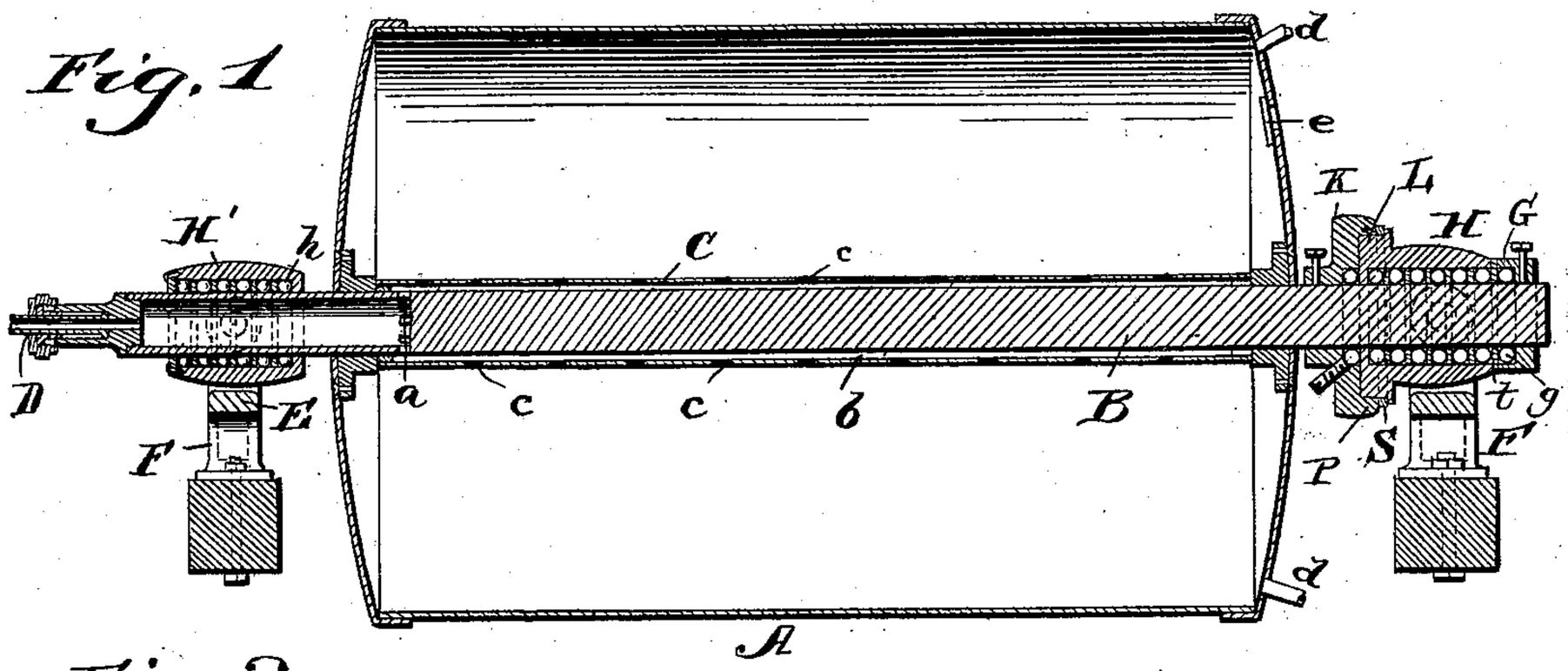


Fig. 2.

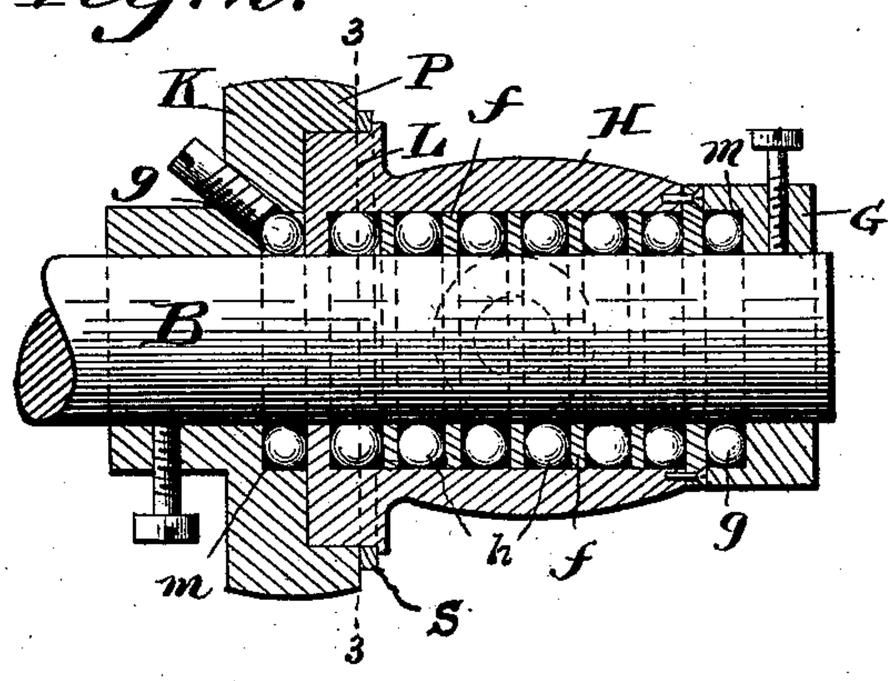


Fig. 3.

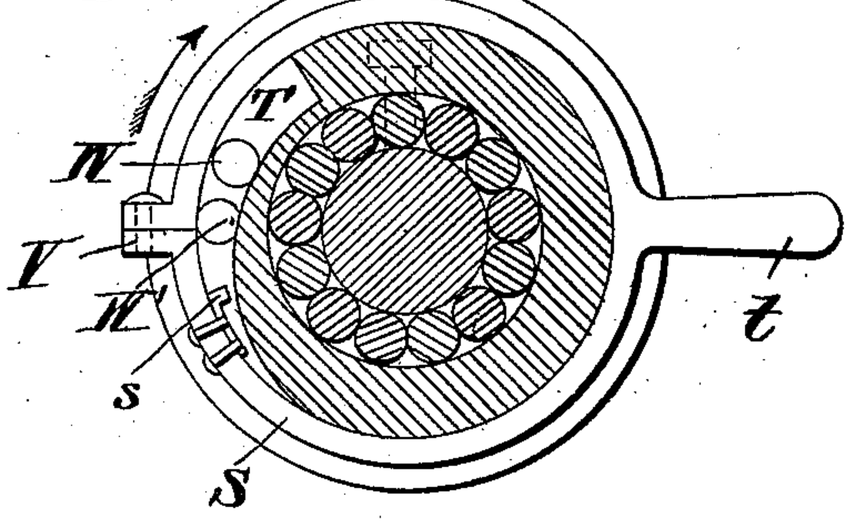


Fig. 4.

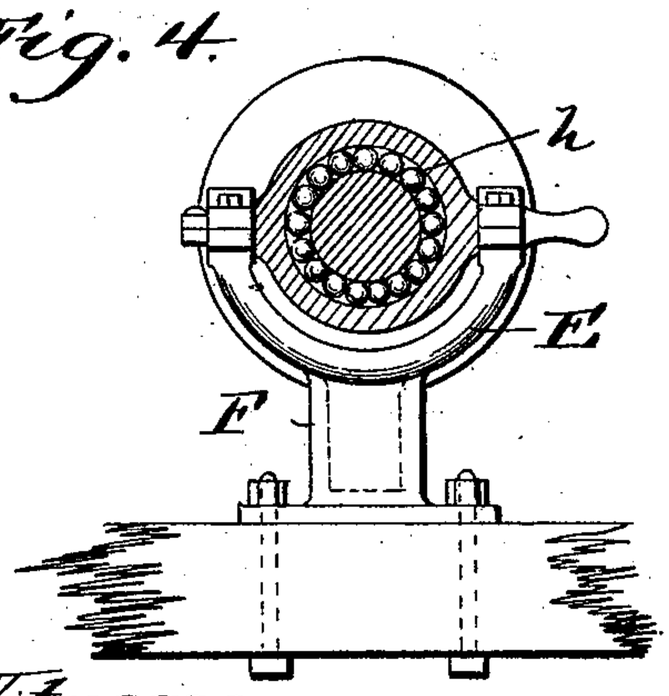
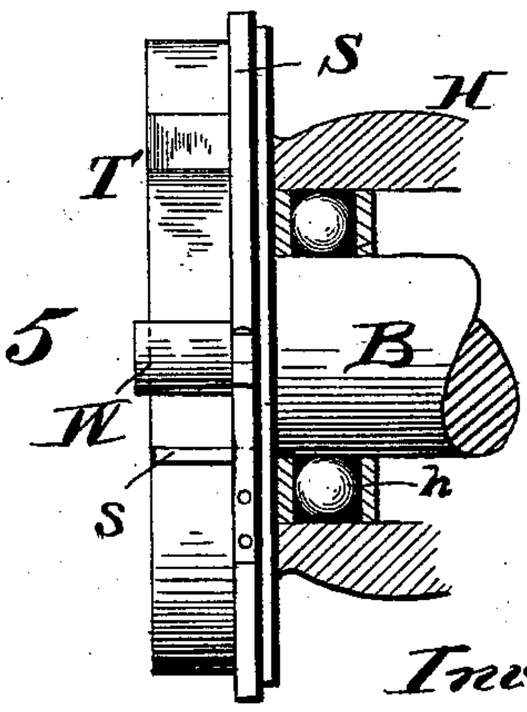


Fig. 5



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UNITED STATES PATENT OFFICE.

JEAN MANDOT, OF NEW ORLEANS, LOUISIANA.

ROTARY DRYING-CYLINDER.

SPECIFICATION forming part of Letters Patent No. 533,960, dated February 12, 1895.

Application filed June 11, 1894. Serial No. 514,206. (No model.)

To all whom it may concern:

Be it known that I, JEAN MANDOT, a citizen of France, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Rotary Drying-Cylinders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to rotary drying cylinders and is adapted for use in laundries and other places where goods are to be dried and smoothed or cylindered by contact with smooth heated metal.

The object of the invention is to provide a hollow metal cylinder which may be uniformly, thoroughly and rapidly heated at all times by steam, and also be adapted to rotate very freely with the least amount of friction.

It is also the object of my invention to provide the bearing of the cylinder shaft with a device which may be so adjusted as to permit rotation in both directions or in one direction only, at the will of the operator.

To this end the invention consists in certain combinations and arrangement of parts hereinafter more fully described and claimed.

In the drawings: Figure 1 is a longitudinal sectional view of the cylinder mounted in its bearings. Fig. 2 is an enlarged sectional view of one of the bearings. Fig. 3 is a sectional view on the line 3, 3, of Fig. 2. Fig. 4 is a sectional view of the bearing showing the swiveled support in elevation. Fig. 5 is an enlarged detail view of the adjustable stop device with the collar removed.

A, represents the cylinder shell which is usually made of copper and is about four feet in diameter. It is supported on its center by the steel shaft, B, which is solid except for a short distance at one end which is bored out hollow. Around the shaft within the cylinder is placed a sleeve or tube C, which is larger than the shaft and is held at its end by suitable collars between it and the shaft thereby providing the annular space *b* throughout the length of the shaft in the cylinder. The hollow space in the end of the shaft extends to a point within the sleeve and there communicates with the annular space *b*, by a series of perforations or openings *a*, around the shaft. The hollow end of the shaft is also connected to the steam delivery pipe D by means of a stuffing box whereby a steam tight rotary joint is secured. The sleeve C is uniformly perforated throughout its length and circumference so that the steam in passing through the hollow end of the shaft and the annular space is delivered uniformly and rapidly to all parts of the cylinder thereby heating it very effectively.

Two drain or discharge nozzles *d*, are placed diametrically opposite each other on the cylinder and through these the water of condensation is taken off as the cylinder revolves.

e, represents an air or vacuum valve opening inwardly, which permits the entrance of air in case the condensation should be so rapid as to produce a great reduction of pressure within the cylinder endangering a collapse.

The shaft turns in ball bearings at either end which run in boxes supported by and pivoted to the yokes E which have a swivel joint in the standards F the whole being carried by a suitable framework.

The journal boxes H, and H′, are made of aluminum bronze and contain several rings or rows of balls *h*. These balls are of tempered steel and the rows are separated from each other by washers or annular disks *f*, which prevent the balls from rubbing on each other and getting mixed together. The box or casing H′ has merely the flanges and washers to retain the balls in position thus permitting the free motion of the shaft longitudinally in the bearing. The casing H at the other end of the shaft is however constructed a little differently. In order to receive the thrust produced by any longitudinal motion of the shaft, two collars G and K are placed on the shaft and fastened thereto by screws as shown. One of these collars is placed on each side of the casing or journal box H and each has a groove *m*, in which revolve another set of balls *g*, which bear against the flanges of the casing H. The balls *g* prevent any lateral movement of the shaft and at the same time reduce the friction of the bearing, resulting from any tend-

ency of the shaft to move laterally, to a minimum.

One end of the casing H is enlarged as shown at L and over this projects the flange P of the collar K. The end L is also surrounded by the adjustable strap S which is provided with a handle *t*. The friction between the strap and the end L of the casing is so adjusted by the screw V that it will remain in any position to which it is turned. On the rim L beneath the flange P of the collar and the straps is cut a crescent shaped slot T shown in Fig. 3 and in this slot is placed a cylindrical wedge roller W. The slot is deep enough at one end to allow the wedge roller to turn under the strap and the flange P without binding as shown and as long as the cylinder turns in the direction of the arrow the wedge roller will stay in the deep end of the slot and not prevent the free rotation of the cylinder; but in case the cylinder is turned in the opposite direction, the wedge roller is immediately crowded into the narrow part of the slot as shown at W′, and wedged under the flange of the collar which is fastened to the shaft thereby stopping the motion of the cylinder. The strap S has a catch *s*, fastened to it and projecting into the slot T in such a way as to hold up the wedge roller when turned to the proper position thereby preventing the brake from acting and allowing free rotation of the cylinder in either direction.

As the cylinder is subject to great variations in temperature and consequently to some expansion and contraction it is important that while the shaft is fixed longitudinally by the collars in the bearing at one end, it shall be perfectly free to slide in the bearing at the other end of the shaft.

The operation of the device is as follows: Steam is admitted by the pipe D through the stuffing box into the hollow end of the shaft, then through openings *a* into the annular space between the shaft and sleeve C. In this space it passes the full length of the shaft and issues from the many perforations *c*, to all parts of the cylinder, thereby heating it very thoroughly and rapidly. All the air, water of condensation, &c., readily finds its escape through the nozzles *d*. When the outer surface of the cylinder is sufficiently heated, the goods that are to be smoothed and pressed are first steeped in a solution of water and special gum or glue and then laid over the surface of the cylinder and made to adhere by firm pressure. In this way the goods are kept perfectly straight and free from wrinkles and are very quickly dried.

Having now described my invention, what I claim as new is—

1. In a drying cylinder the combination of the steam tight shell A, the shaft having a hollow portion bearings H, H′, steam connections to the hollow portion of the shaft, openings *a*, and the sleeve C surmounting the shaft and having perforations *c*, whereby steam is uniformly distributed to all parts of the cylinder substantially as described.

2. In a drying cylinder the hollow cylindrical shell the rotating shaft the journal boxes H and H′ supported on swivel standards, the several sets of balls in said boxes and the rings *f* between each set of balls whereby they are kept separated substantially as described.

3. In a drying cylinder the combination of the hollow shell A the shaft with a hollow portion at one end, the steam pipe connected to the hollow shaft and the openings into the interior of the shell, the journal box H at one end of the shaft, the ball bearings in said box, the collars K and G fastened to the shaft on opposite sides of the journal box H and the journal box H′ on the opposite end of the shaft containing the sets of balls *h*, through which the shaft is free to slide longitudinally as and substantially as described.

4. In a drying cylinder the hollow shell, A, the shaft with the hollow portion communicating therewith the journal boxes containing a plurality of sets of balls, the rings between said sets, the collars fastened to the shaft on each side of one of the journal boxes and the additional sets of balls *g*, bearing between the collars and the flanges of the journal box substantially as described.

5. In a drying cylinder the hollow shell A, the shaft having a hollow portion, the steam pipe D, the sleeve C surrounding the shaft, the openings *a* in the shaft, the perforations *c*, in the sleeve, in combination with the outlet pipes for the water of condensation and the air valve, substantially as described.

6. In a drying cylinder, the hollow shell A, the shaft having the hollow portion communicating therewith, the outlet pipes, the ball bearings on each end of the shaft and the automatic stop device whereby the cylinder can be turned in one direction only.

7. In a drying cylinder, the hollow shell A, the shaft having a hollow portion communicating therewith, the journal boxes H, and H′, the collar K, provided with a flange P, extending over a portion of the box H, the crescent shaped slot beneath said flange, the wedge roller in the slot and the strap S provided with the catch *s* substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JEAN MANDOT.

Witnesses:
J. BUCHEL,
G. F. COCKER.