

(No Model.)

R. MARA.  
DRYING APPARATUS.

No. 348,566.

Patented Sept. 7, 1886.

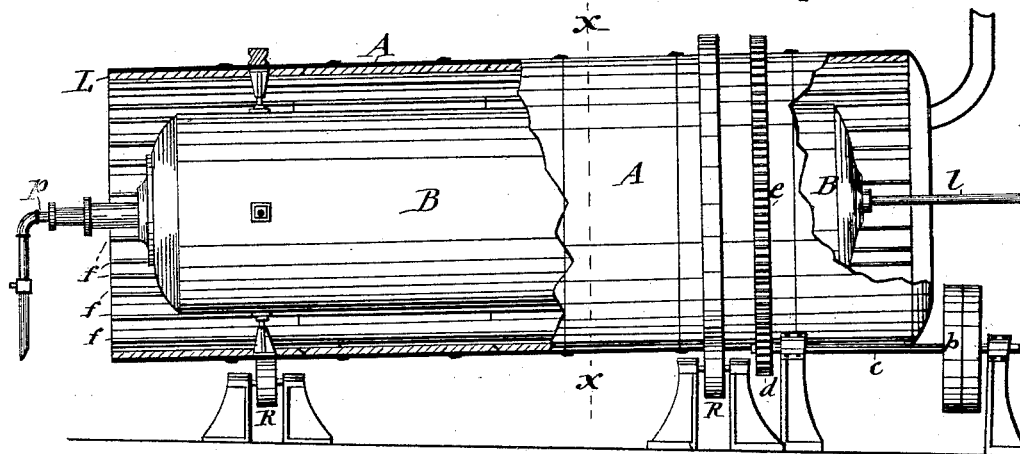


FIG-I-

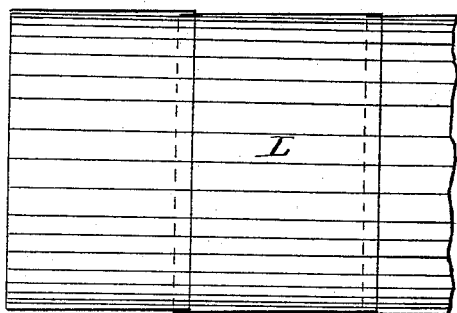


FIG-III-

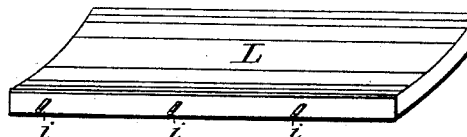


FIG-IV-

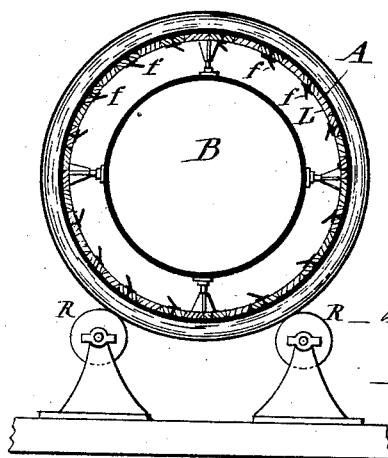


FIG-II-

WITNESSES:

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*his Atty.*

# UNITED STATES PATENT OFFICE.

RHODY MARA, OF WARSAW, NEW YORK.

## DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 348,566, dated September 7, 1886.

Application filed February 25, 1886. Serial No. 193,201. (No model.)

*To all whom it may concern:*

Be it known that I, RHODY MARA, of Warsaw, in the county of Wyoming, in the State of New York, have invented new and useful Improvements in Drying Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of apparatus in which a rotary metallic drying-cylinder is heated by a steam cylinder or tube extending longitudinally through said drying-cylinder, and is slightly inclined from a horizontal position, so as to receive the substance to be dried at its elevated end, and discharge the dried substance at the opposite and lower end.

In the operation of said drying apparatus, especially when employed for drying salt, it has been found that the inner surface of the metallic drying-cylinder becomes more or less corroded, and, inasmuch as the salt is naturally of a sharp grain, and is caused to slide on the inner surface of the rotating drying-cylinder, said salt scours said surface and scrapes the rust therefrom, said rust becoming commingled with the salt materially impairs the quality and commercial value of the latter. Furthermore, in the drying apparatus, as heretofore constructed, considerable heat is lost by the radiation thereof from the exterior of the drying-cylinder.

The object of my invention is to obviate the aforesaid injurious result; and to that end it consists in securing to the internal surface of the drying-cylinder a lining of either paper or wood, or other material which is neither corrosive nor capable of conducting heat.

In the annexed drawings, Figure I is a side elevation of a drying apparatus provided with my improvements, portions of the drying-cylinder being broken away to better illustrate the invention. Fig. II is a vertical transverse section on line *x x*, Fig. I. Fig. III is a detached side view of a section of the lining; and Fig. IV is a detached isometric view of a section of the wooden lining.

Similar letters of reference indicate corresponding parts.

A represents the drying-cylinder, usually constructed of boiler-iron, and mounted on rollers R R, which support said cylinders slight-

ly inclined from a horizontal position and allow it to freely revolve about its axis, the rotary motion being transmitted to the drying-cylinder by a pulley, *b*, attached to a counter-shaft, *c*, and connected by a belt with the prime motor, (not shown in the drawings,) and a pinion, *d*, attached to said counter-shaft, meshes in a circumferential gear, *e*, on the exterior of the drying-cylinder. The said drying-cylinder is open at both ends, and receives at its elevated end the substance to be dried and delivers the dried substance from the lower end of the cylinder.

B denotes the heating cylinder or tube, which is extended longitudinally through the center of the drying-cylinder, and is sustained in its position by brackets or posts interposed radially between the sides of the cylinder B and interior of the cylinder A, as shown in Fig. 2 of the drawings. Said cylinder B is heated by steam admitted thereto by a pipe, *l*, connected to the upper end thereof, and another pipe, *p*, connected to the lower end of the cylinder, carries off the water of condensation.

L represents the lining applied to the inner surface of the drying-cylinder A for the purpose of preventing or reducing the radiation of heat from the exterior of said cylinder, and also of protecting the salt or other substance under treatment from coming in contact with the metallic surface of said cylinder, and thus guarding against the pollution of the salt by the rust which is to a greater or less extent formed on the said metallic surface. Said lining I form of cylindrical sections composed either of wood, paper, or other suitable material which is nearly or quite a non-conductor of heat, and presents a hard smooth surface, over which the salt in process of drying slides, and is also incorrodible; and in applying the lining I first introduce one of the cylindrical sections at the lower end of the drying-cylinder A, and then place the other sections successively one back of the other, and with their lower ends overlapping the higher ends of the adjacent sections, as represented in Fig. III of the drawings, thereby preventing the salt or substance under treatment from entering the joints between the sections of the lining.

When wood is preferred as the material for the lining, I construct said lining of staves joined at their edges by dowel-pins *i i*, as rep-

sented in Fig. IV of the drawings. Upon the inner surface I secure longitudinal shelves *f*, either by bolts, rivets, or nails passing through said shelves and through the lining, and, if desired, also through the shell of the drying-cylinder, according to the strain they are to be subjected to. Said shelves extend in long strips from end to end of the cylinder, and by their extending across the joints of the lining and their attachment to the several sections, said shelves serve to stay the lining in its proper position in the cylinder. The shelves also serve to lift the salt and drop it upon the heating-cylinder B during the rotation of the same with the drying-cylinder A, and from the cylinder B the salt drops back to the bottom of the drying-cylinder A.

I do not claim the combination of the rotary heating-cylinder B, extended longitudinally through the drying-cylinder and arranged to rotate synchronously therewith; neither do I claim, broadly, the combination, with the aforesaid drying-cylinder, of shelves secured to the inner sides thereof, as I am aware the same is not new; but

What I claim as my invention is—

1. The combination, with the rotary metal-

lic drying-cylinder A, of the lining L, composed of cylindrical sections of wood, paper, or analogous material secured to the inner side of said cylinder and arranged successively endwise, one back of the other, with the lower end of each section lapping onto the inner side of the upper end of the adjacent section, substantially as described and shown.

2. The combination, with the rotary metallic drying-cylinder A, of the lining L, composed of cylindrical sections of wood, paper, or analogous material applied to the inner side of said cylinder and arranged successively endwise, one back of the other, and shelves *f*, secured longitudinally to the inner surface of said lining to stay the latter, substantially as set forth and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Warsaw, in the county of Wyoming, in the State of New York, this 20th day of February, 1886.

RHODY MARA. [L. S.]

Witnesses:

E. M. BARTLETT,  
A. E. PURDY.