

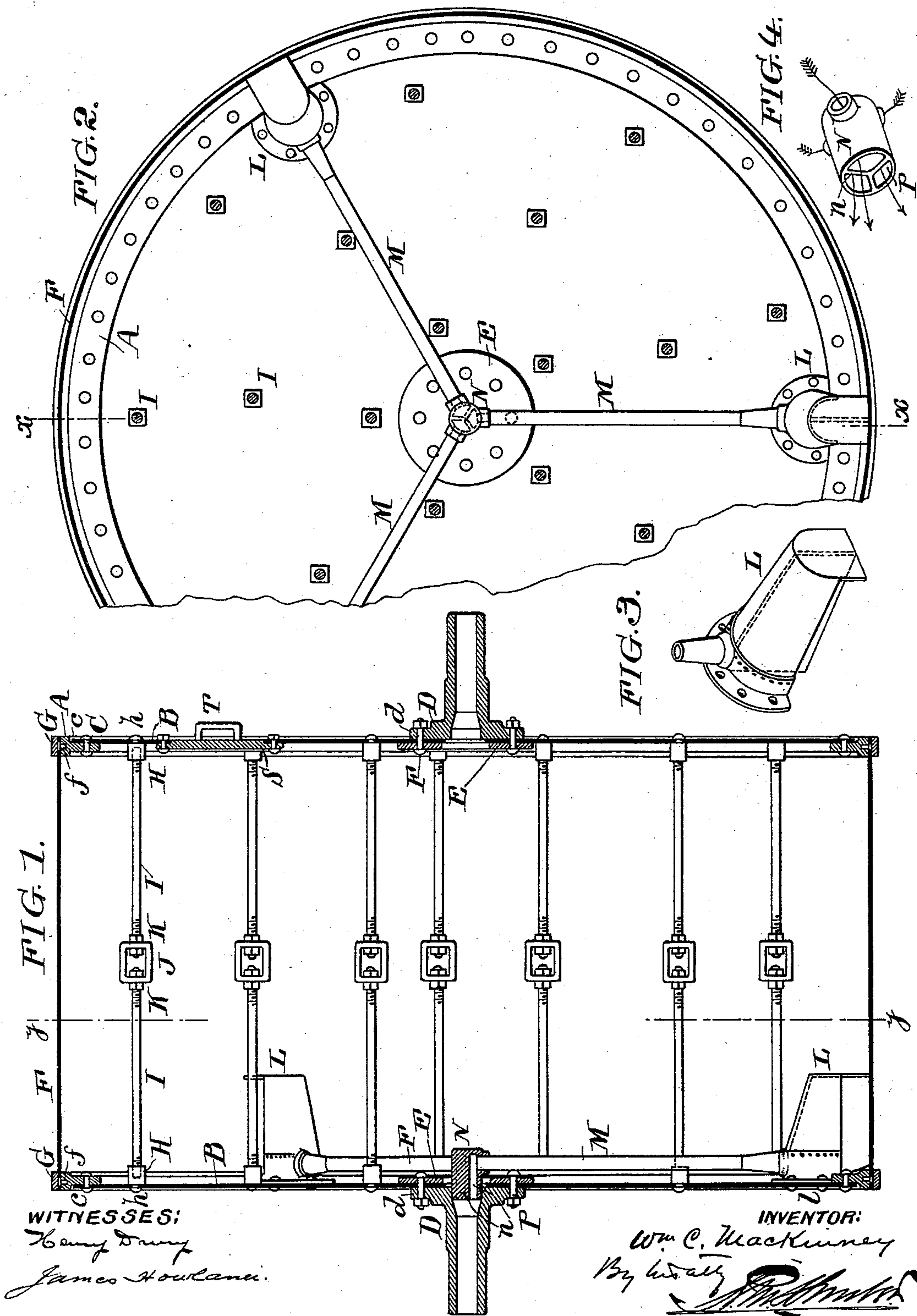
(No Model.)

W. C. MACKINNEY.

DRYING CYLINDER FOR TEXTILE MACHINERY.

No. 529,038.

Patented Nov. 13, 1894.



UNITED STATES PATENT OFFICE.

WILLIAM C. MACKINNEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
H. W. BUTTERWORTH & SONS COMPANY, OF SAME PLACE.

DRYING-CYLINDER FOR TEXTILE MACHINERY.

SPECIFICATION forming part of Letters Patent No. 529,038, dated November 13, 1894.

Application filed February 7, 1894. Serial No. 499,370. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. MACKINNEY, of the city and county of Philadelphia and State of Pennsylvania, have invented an
5 Improvement in Drying-Cylinders for Textile Machinery, of which the following is a specification.

My invention has reference to drying cylinders for textile machinery, and consists of
10 certain improvements which are fully set forth in the following specification and shown in the accompanying drawings which form a part thereof.

Heretofore it has been customary to form
15 drying cylinders with two heavy cast iron heads secured upon a shaft, and about the peripheries of which a cylinder of copper is clamped with the edges thereof hammered over to form flanges fitting against the outer
20 faces of the said heads. Such cylinders to be strong were necessarily made very heavy, thereby not only increasing the cost, but requiring heavier and more expensive supports, as well as necessitating more power to move
25 them.

My improvements are designed to overcome these objections, and in carrying out my invention I form the heads of the cylinders each of an annular cast or rolled metal
30 rim to the peripheries of which the copper cylindrical surface is secured, and to the outer side face of which circular sheet metal plates are secured, the centers of which plates receive the journal bearings. Furthermore the
35 said plates are strengthened by transverse stays or ties connecting the plates on opposite sides.

My improved cylinder is further provided with one or more buckets arranged near its
40 periphery on the interior, which buckets are connected by pipes terminating in a central head having horizontal passageways corresponding in number to the number of buckets, and having the open ends of said passageways directed into the tubular portion of
45 the journal so as to direct the water of condensation outward from the cylinder during the rotation thereof. In my construction all of the joints are made steam tight, prefer-

ably by means of rivets and calking as in the 50 case of boiler manufacture.

My invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a vertical sectional elevation on 55 line $x-x$ of Fig. 2. Fig. 2 is a sectional elevation on line $y-y$ of Fig. 1. Fig. 3 is a perspective view of one of the buckets; and Fig. 4 is a perspective view of the liquid directing head removed.

60
A, A are two annular rims of cast or rolled metal and are preferably T shaped in cross section. To the outer surface of these rims is arranged the light cylindrical casing F of copper or other metal. This cylinder is held 65 laterally upon these rims A, A by means of small pins of rivets f which extend through the copper cylinder into the peripheries of the said rims A.

70
G, G are two annular bands or tires which are shrunk over the ends of the cylinder F and in alignment with the annular rims A so as to clamp the edges of the cylinder F firmly to the rims A and also to hold the pins f firmly in place. By this construction a liquid tight 75 joint is insured and the copper F cannot be drawn between the band G and rims A. To make the joints still more tight, if necessary, the outer edges of the copper cylinder F may be calked.

80
B B are two circular disks of sheet steel and these are riveted to the annular rims A by the rivets C, and the outer edges of the said steel sheets are calked at c to make an absolutely steam tight joint. One or both of 85 the said heads B may be provided with a manhole S firmly secured in place by rivets or bolts T so as to make a steam tight joint. This manhole is only open in case of trouble within the cylinder, and would not be opened 90 but once in a great while, if ever, therefore the connections at T may be made very secure and the joints between the manhole and the edges of the plate may be made by calking. At the center of the side plates B, B and 95 upon the outsides thereof are secured the hollow journals D D which are provided with flanges d to fit against the outer faces of said

heads. The heads are perforated at the center in alignment with the tubular passageway of the journals, and to secure proper strength an annular casting E is arranged upon the inside of each of the heads and rivets F employed to unite the flanges of the journals to the annular plates E and the heads B as is clearly shown. As these cylinders are made four or more feet in diameter and as the heads or side plates are made light in my improved construction, I prefer to employ stay rods connecting the heads on the interior of the cylinder. In carrying out this part of the construction I provide hubs H which have shanks passing through the plates B and riveted upon the outside making a steam tight connection. Into these hubs are screwed or otherwise secured rods or bolts I.

The ends of the bolts I projecting from opposite faces or heads B are received in a coupling J and adjusted and held rigidly with relation to other by means of said coupling and nuts K. In this manner there is no possibility of leakages where the connection is made between the said bolts or rods and the plates B. There may be any number of these stay bolts or rods desired, the number being varied to suit the particular duty and size of the cylinder.

L are buckets, preferably three in number, and are bolted to the outer peripheries of one of the heads B as at l, and said buckets are arranged at intervals around the cylinder and provided with discharge tubes M projecting inwardly toward the journals. The inner ends of the three tubes M are received in a tubular head N which is provided with three horizontal passageways P formed by interposed webs n. The outlets of said passageways P are directed into the tubular bearing D.

In construction the head N is driven into the interior of the inner side of the bearing D as is clearly shown in Fig. 1.

It will now be observed that as the cylinder revolves in the direction indicated by the arrow in Fig. 2, any water of condensation lying in the bottom thereof is received in the buckets L, and when the same rise above a horizontal plane through the axis of the journals the liquid runs down the tubes M, and striking the diaphragm or wall n is directed outward through the tubular journal and thereby discharged by its momentum without possibility of running down through the downwardly projecting tube M and discharging into the cylinder by the lowermost bucket, which latter result would take place if said diaphragm n were not employed.

My improved construction of drying cylinder combines lightness with strength and steam tightness, thereby insuring all of the requirements necessary in a cylinder of this kind.

The minor details of construction may be

more or less modified without departing from the principles of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a drying cylinder, the combination of the cylindrical drying surface, with two heads arranged at its ends each of which heads consists of a heavy annular rim to which the cylinder is directly connected, and a circular plate of sheet metal secured to the annular rim by steam tight joints and perforated at its center, and a cast metal journal secured concentric with the centers of the heads and projecting outwardly.

2. In a drying cylinder, the combination of the cylindrical drying surface, with two heads arranged at its ends each of which heads consists of a heavy annular rim to which the cylinder is directly connected and a circular plate of sheet metal secured to the annular rim by steam tight joints and perforated at its center, a cast metal journal secured concentric with the center of each of the heads and projecting outwardly, and a series of transverse stay rods or bolts connecting the two heads at intervals.

3. In a drying cylinder, the combination of the cylindrical drying surface, with two heads arranged at its ends each of which heads consists of a heavy annular rim to which the cylinder is directly connected, a circular plate of sheet metal secured to the annular rim by steam tight joints and perforated at its center, a cast metal journal secured concentric with its center and projecting outwardly, and a series of stay rods or bolts connecting the two heads at intervals consisting of hubs having projections passing through the plates and riveted thereto, and bolts or rods secured to the hubs and projecting toward each other and having their ends secured together by adjusting coupling devices.

4. In a drying cylinder, the combination of the cylindrical drying surface of metal, two heads secured to the ends of the said cylinder each consisting of a heavy annular rim, a circular sheet metal plate riveted to said rim, a cast iron journal secured to the center of the plate and projecting outwardly, pins projecting through the cylinder into the peripheries of the annular rims, and annular bands or tires shrunk upon the outer surface of the cylinder and in alignment with the annular rims and over the pins.

5. A drying cylinder, composed of two heavy annular metallic rings, a cylindrical surface of sheet metal secured to said metallic rings by steam tight joints, two disks of sheet metal composing the sides of the cylinder secured to said annular metallic rings by steam tight joints and provided with central apertures, and heavy metallic hubs secured to said sheets metal disks at said apertures, the whole constituting a firm and light drying cylinder.

6. A drying cylinder, composed of two heavy annular metallic rings, a cylindrical surface of sheet metal secured to said metallic rings by steam tight joints, two disks of sheet metal composing the sides of the cylinder secured to said annular metallic rings by steam tight joints and provided with central apertures, stay rods within the cylinder connecting said sheet metal disks and secured thereto by metallic heads riveted to the disks and receiving the ends of the stay rods on the inside of

the cylinder, and heavy metallic hubs secured to said sheets metal disks at said apertures, the whole constituting a firm and light drying cylinder.

In testimony of which invention I have hereunto set my hand.

WM. C. MACKINNEY.

Witnesses:

ERNEST HOWARD HUNTER,
JAMES HOWLAND.