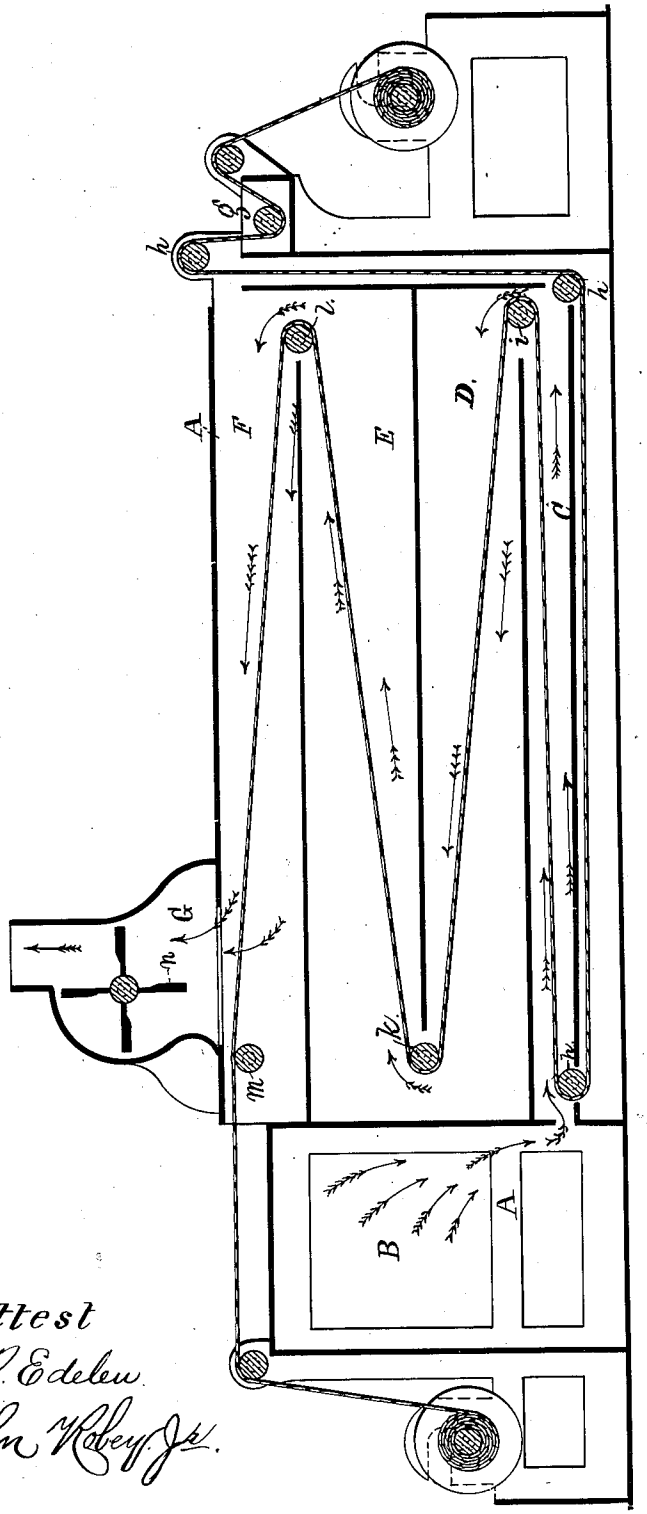
A. T. BECKER.

MACHINE FOR DRYING SIZED YARNS.

No. 175,644. Patented April 4, 1876.



Attest
W. R. Edelen
John Wolcey Jr.

Inventor
Arthur T. Becker
by J. J. Halsted
his atty

UNITED STATES PATENT OFFICE.

ARTHUR T. BECKER, OF COHOES, NEW YORK.

IMPROVEMENT IN MACHINES FOR DRYING SIZED YARNS.

Specification forming part of Letters Patent No. **175,644**, dated April 4, 1876; application filed February 11, 1876.

To all whom it may concern:

Be it known that I, ARTHUR T. BECKER, of Cohoes, in the county of Albany and State of New York, have invented certain new and useful Improvements in Machines for Drying Sized Yarns; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My improvements relate to an artificial drying of sized yarns, &c.; and they consist in a novel mechanism for practicing the same.

The process employed may be stated to be passing the yarn, after it has been sized, to and fro continuously through a series of tubes, simultaneously with forcing through such tubes, either by blast or suction, a current of air, either hot or cold, or both hot and cold.

One important object in my invention is the utilization and economy, in the act of drying, of the heated air passing through the machine, for in most yarn-driers more heated air is wasted than is availed of to dry the yarn. Another object is that the heating or drying may, when desired, commence where the yarn is wettest, and not at that portion which is farthest from the size-box, and which is objectionable because it blows back upon the yarn the moisture imparted by the sizing to the air, and keeps the yarn moist, and prevents a proper drying.

The accompanying drawing represents a longitudinal vertical section of a machine embodying my invention.

In a frame, A, of any suitable form and size, I provide a compartment, B, which may be heated by any appropriate means, either in the machine itself, or from an independent source, or from the waste heat of any furnace. C, D, E, and F represent horizontal tubes or chambers, of which any desired number may be used, placed one above another, and each communicating with the one beneath or above it, receiving its blast of air at one end, and conveying it at its opposite end into the tube immediately above it, the last one discharging it into the exhaust-chamber G, whence it escapes. The yarn passes from the sizing-trough *g* about appropriate guide-rollers *h*, thence into the lowermost tube or chamber C, whose bottom may be the floor on which the whole machine stands, thence over guide-roller *i*, thence in a reverse direction through the next tube or chamber, and over roller *k*, thence back in the contrary direction, through the next tube or chamber, and then again over a similar guide-roller, *l*, from which its direction of travel is again reversed, and so on through as many tubes as may be employed, to the discharging-roller *m*, and thence to any appropriate winding beam or beams.

It will be observed that in its course the yarn does not touch anything but the guide-rollers, and that it is free at all its surface and for its whole length to be acted upon uniformly by the air-currents.

The exhaust-fan *n* creates a powerful suction or exhaust, whereby the air from the compartment B is drawn with great velocity first into and through the lowermost tube or chamber C, with which it communicates, and thence successively into and through each and all of the tubes or chambers, taking the same route as the yarn—that is, a backward and forward course—until it finds its exit through and out of the exhaust or fan-box.

Instead of drawing the air through it may be driven through the machine, but in the same direction with the circuitous route of the yarn through the tubes, and with the same effect, by simply placing a blower in communication with the top of the compartment B, and causing it to force the air inward; or the air may be driven or drawn through the series of compartments in the opposite direction to that of the passing yarn.

It will now be observed that by my process and construction I utilize the heat or air currents, and all the drying properties, during the whole route of travel and counter-travel, affording no opportunity for its escape or dissipation to any considerable degree into the outer air, it being understood that the machine is substantially closed at all available points.

By reason of the strong currents in such tubes or chambers the motes on the yarn are sucked or blown off into the air, and carried out with the blast, thus avoiding "tie-backs" or breaks in the yarn, which hinder the drying

operation, compel the stopping of the machine, and materially lessen the quantity of yarn dried in a given time.

If desired, the yarn may be guided back and forth in each or in any of the tubes. The air-tubes may be vertical or otherwise, as well as horizontal, as may be convenient.

I claim—

In a machine for drying yarns, the combination, with a series of air tubes or chambers, of a series of guides or guide-rolls for guiding the yarn to and fro in its passage through such chambers, and means for driving or drawing air through such tubes, substantially as shown and described.

A. T. BECKER.

Witnesses:

JOHN J. HALSTED,

JOHN ROBEY, Jr.