J. HATCH & G. SMITH.

Paper-Drier.

No. 160,824. Patented March 16, 1875.

Fig. 1.

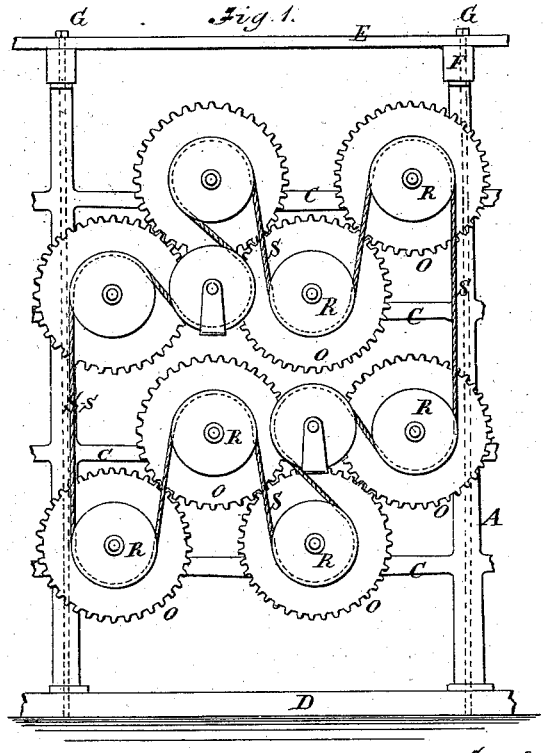



Fig. 2.

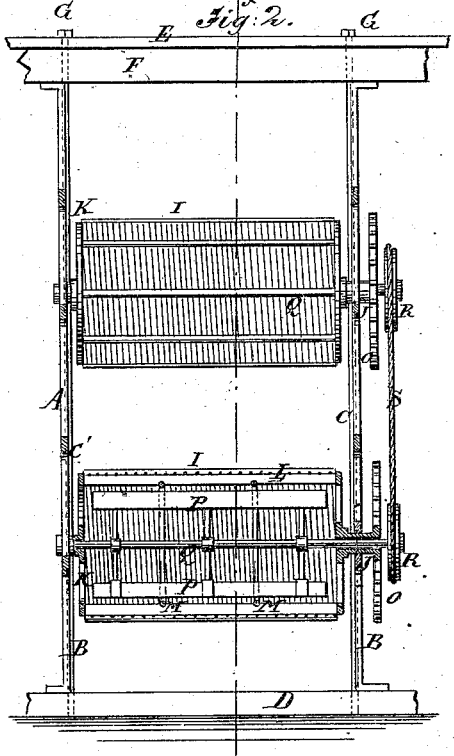
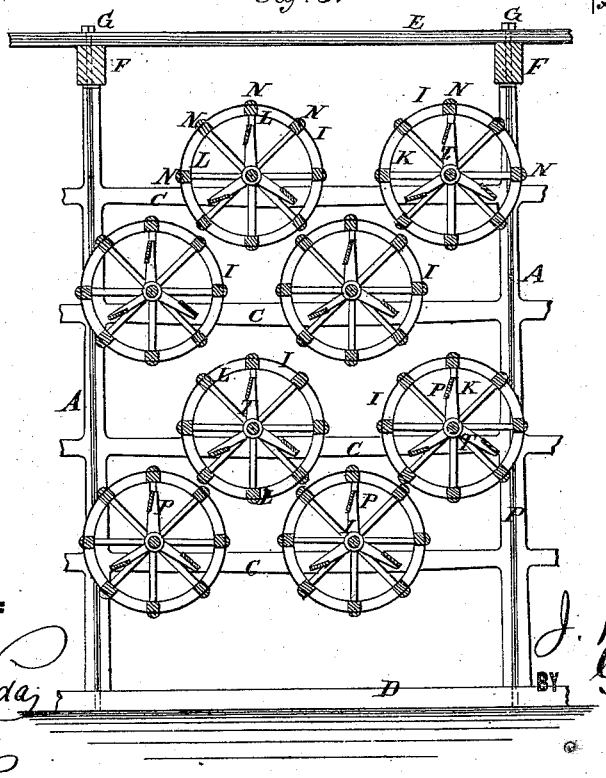



Fig. 3.

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# UNITED STATES PATENT OFFICE.

JONATHAN HATCH AND GUILFORD SMITH, OF WINDHAM, CONNECTICUT, ASSIGNORS TO SMITH, WINCHESTER & CO., OF SAME PLACE.

## IMPROVEMENT IN PAPER-DRIERS.

Specification forming part of Letters Patent No. **160,824**, dated March 16, 1875; application filed January 30, 1875.

*To all whom it may concern:*

Be it known that we, JONATHAN HATCH and GUILFORD SMITH, of the town of Windham, county of Windham and State of Connecticut, have invented an Improvement in Machines for Drying Paper and other articles, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claim.

In the accompanying drawing, Figure 1 is a side elevation. Fig. 2 is an end elevation, partly in section. Fig. 3 is a vertical section of the machine, taken on the line *x x*.

Similar letters of reference indicate corresponding parts.

A is the frame, which consists of two parts, B B, forming the two sides of the machine. Each side is provided with girders C, which support the cylinders and fans. The corner-posts of the frame extend from the floor D below to the floor *e* above. E represents the timbers of the upper floor. These posts are cast with a longitudinal recess in their inner sides, which receive rods or bolts *c'*, which extend from under side of the lower floor, through the timbers E and upper floor, and are fastened by nuts G, as seen in the drawing. I represents any number of cylinders, supported on the long hubs J. These cylinders each have two heads, K, connected together by the longitudinal rail L. These heads are made to consist of a hub and a spider, each being made separately, and bolted, riveted, or otherwise fastened together.

The advantages claimed in this manner of making these heads are, first, to prevent breakage in the shrinkage in casting; secondly, to admit of lightening the several parts; thirdly, to facilitate the construction of said heads and hubs.

These hubs, as will be seen, are made with a bearing on their outer surfaces for the cylinder; also form an inner bearing or box for the fan-shafts.

We are aware that cylinders have been made in other countries for the same purpose, *i. e.*, the drying of paper or other fabrics; but none have been made to our knowledge that have this double bearing—one within the other. By this means we are able to make a more compact machine with a very small shaft for fans, thus reducing the power required to drive, and expense in construction.

The longitudinal rails L are stayed by one or more internal rings, M.

These cylinders have heretofore been covered with woven wire-cloth or wire-gauze, for the purpose of preventing the paper or other substances or similar articles from being entangled in the fans, hereinafter described; but we have discovered that by winding the wire spirally over the cylinders and fastening it with the cap-piece N, they can be made cheaper, and that better results are obtained than when wire gauze or cloth is employed.

These cylinders are revolved in a steady and uniform manner by any suitable application of motive power, gear-wheels O being attached to the hubs at one end, which engage with each other.

In the drawing the cylinders are placed in two groups, and may be revolved in opposite directions, or as may be desired.

P represents the fans, which are revolved in a more rapid rate of speed within the cylinders, and in the same or contrary direction from the motion of the cylinders, as may be desired. These fans are supported by central shafts Q, which extend through the long hubs of the cylinders, each having a band-pulley, R, on one end outside of the gear-wheels O. S is the band, which passes over and under the pulleys, and communicates motion to the whole series.

Power may be applied to this band or belt as may be found convenient, and more than one band or belt may be used.

The fans consist of two or more spiders, T, fitted to the central shafts Q, having the blowing-fan attached to the extremity of the arm arranged to revolve within the cylinders, and force the air through the cylinders, which, as before stated, are revolved either in the same or in an opposite direction.

The number of cylinders and fans may be multiplied to any required extent.

The paper, cloth, or other article to be dried is passed over and under the cylinders from one to the other, and taken off onto a reel, or disposed of in the usual manner.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

The hubs J J, spider-heads K K, rails L, and rings M, combined with the spirally-wrapped wires to form a drying-cylinder.

JONATHAN HATCH.
GUILFORD SMITH.

Witnesses:
JOHN W. TIBBITS,
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