J. NORTON, Jr.

Paper Drier.

No. 4,480. Patented April 25, 1846.

Fig. 1.

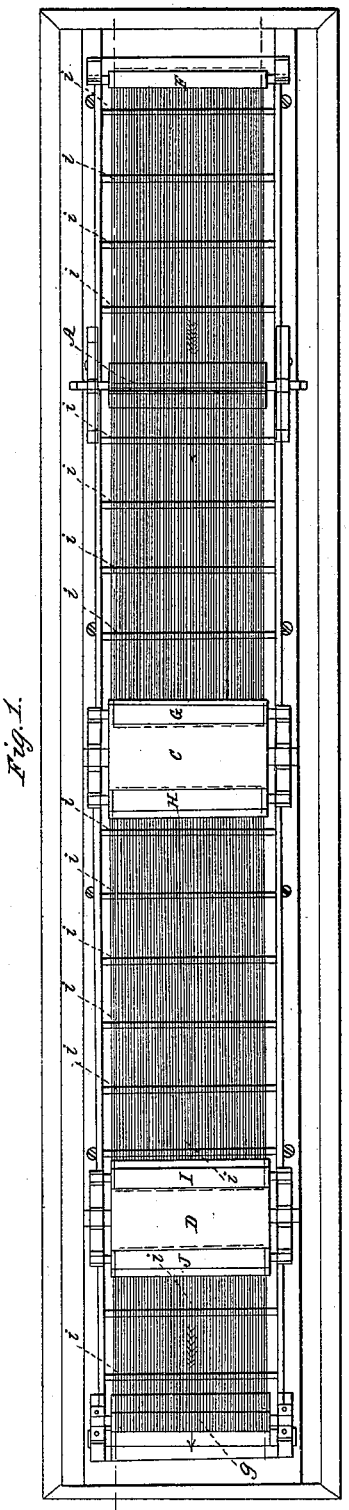
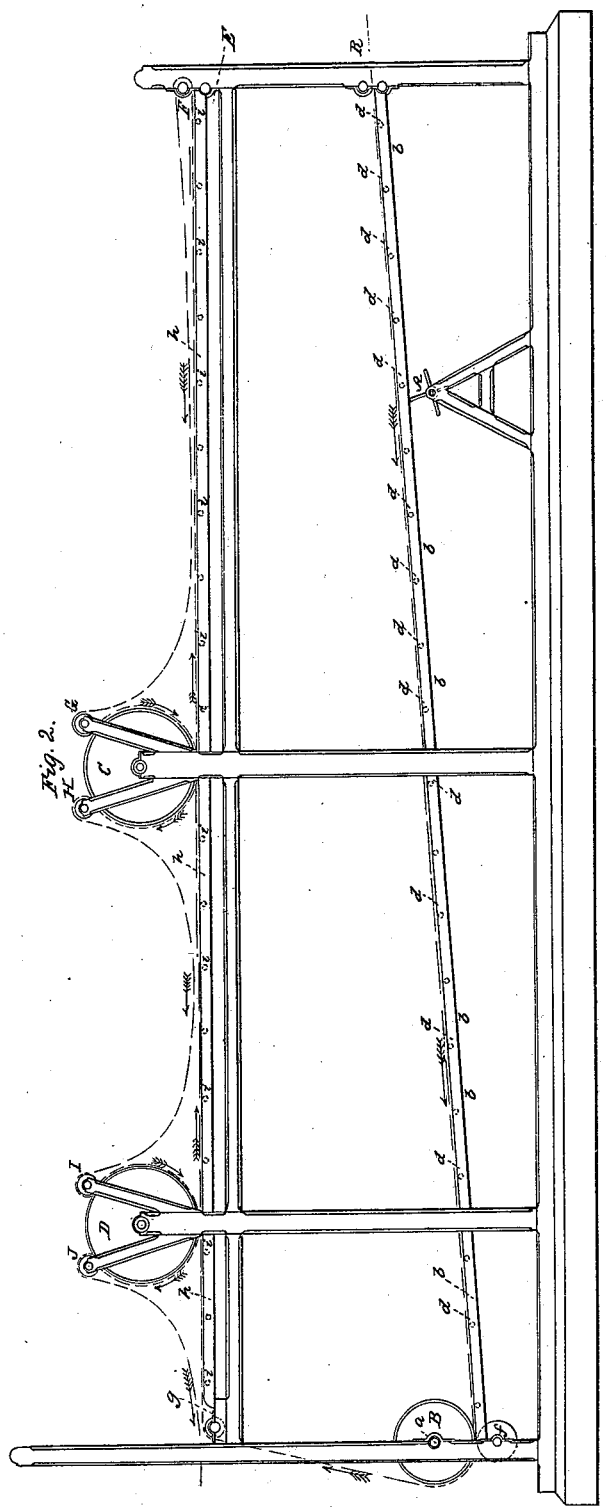


Fig. 2.



UNITED STATES PATENT OFFICE.

JOSHUA NORTON, JR., OF BOSTON, MASSACHUSETTS.

MODE OF DRYING SIZED PAPER.

Specification of Letters Patent No. 4,480, dated April 25, 1846.

To all whom it may concern:

Be it known that I, JOSHUA NORTON, JR., of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Machine for Drying Sized Paper; and I do hereby declare that the following is a full and exact description.

The nature of my invention consists in a method of gradually drying the sizing on paper of any length so as not to injure it by the process; this I do by passing the paper directly from the sizing over a fan A, which takes out a portion of the evaporation thence passing around the metallic cylinder B, which cylinder is supplied with steam through the hollow axis *a*, thence passing over the belting *h*, and between the wooden rollers E and F and over the top of the roller F, it is carried partially around the wooden roller G, the steam cylinder C and the wooden roller H, thence partially around the wooden roller I, the steam cylinder D, and the wooden roller J. From this roller it is delivered directly to the calendering and afterward to the ruling machine in one continuous sheet, thereby effecting a great saving in the cost of ruled paper compared with that prepared by the present method.

The present process is to cut the paper into sheets of the various dimensions in use, to size the sheets and dry them separately upon lines, after which they are calendered and ruled; by my improved method the paper requires no handling from the time it leaves the sizing until it has passed through the several processes of drying, calendering and ruling.

The paper on entering the machine is received upon a belting *b*, of twine or fine cord, represented by the blue line in the drawings Figures 1 and 2. This belting rests on the supports *d*, *d*, Figs. 1 and 2. The paper is drawn over this belting in its passage through the machine, the motion being given to the paper by suitable gearing attached to the cylinders, so arranged as to allow the speed to be increased or diminished, in order that the paper may be thoroughly dried without injuring the quality of the sizing, from its being fried by an excess of heat, as the cylinders are to be supplied with a given amount of steam, and the paper is to pass rapidly enough to absorb so much of the heat as will keep the cylinders at a given temperature; the speed at which the paper passes over the cylinder and the amount of steam supplied regulating this result.

As the sizing is more liable to fry when it first enters upon the machine, and is as yet a saturated solution, than it will be when it has been partially dried, I deem it necessary to produce evaporation by the fan A, before it has reached either of the steam cylinders and moreover the cylinders should progressively increase in temperature, the first B, is intended to be about 80° of Fahrenheit, the second C, about 130°, and the third D, or last one about 250°, this being deemed sufficient to finish the drying process. Should this however be found insufficient, one or more additional cylinders of the same or increased temperature can be added without at all altering the principles of the machine.

The paper indicated by the red lines passes three times from one end of the machine to the other in the direction indicated by the arrows; being received at K, it passes over the belt *b*, resting on the supports *d*, *d*, thence between the steam cylinder B, and the wooden roller *f* which serves to press the paper against the cylinder, thence over the wooden roller *g*, upon the belt *h*, resting upon the supports *i*, *i*, to the rollers E and F, between which it passes and over the top of F, around the rollers and steam cylinders G, C, H and I, D, J, to the calenders; having traversed a distance of about eighty feet, the time taken in the passage would assist the drying process by the heat supplied from the atmosphere in the room.

I do not intend claiming the principle of drying sized paper by the application of heat by steam, but

What I do claim as my invention and desire to secure by Letters Patent is—

The principle of gradually drying sized paper of any length by means of the fan A, and the hollow cylinders B, C, D, heated by steam to different degrees of temperature in the manner and for the purpose herein described.

JOSHUA NORTON, JR.

Witnesses:

FRANK DANACOTT,

J. R. DANACOTT.