E. L. PERKINS.

Paper Drier.

No. 24,328. Patented June 7, 1859.

Fig. 2.

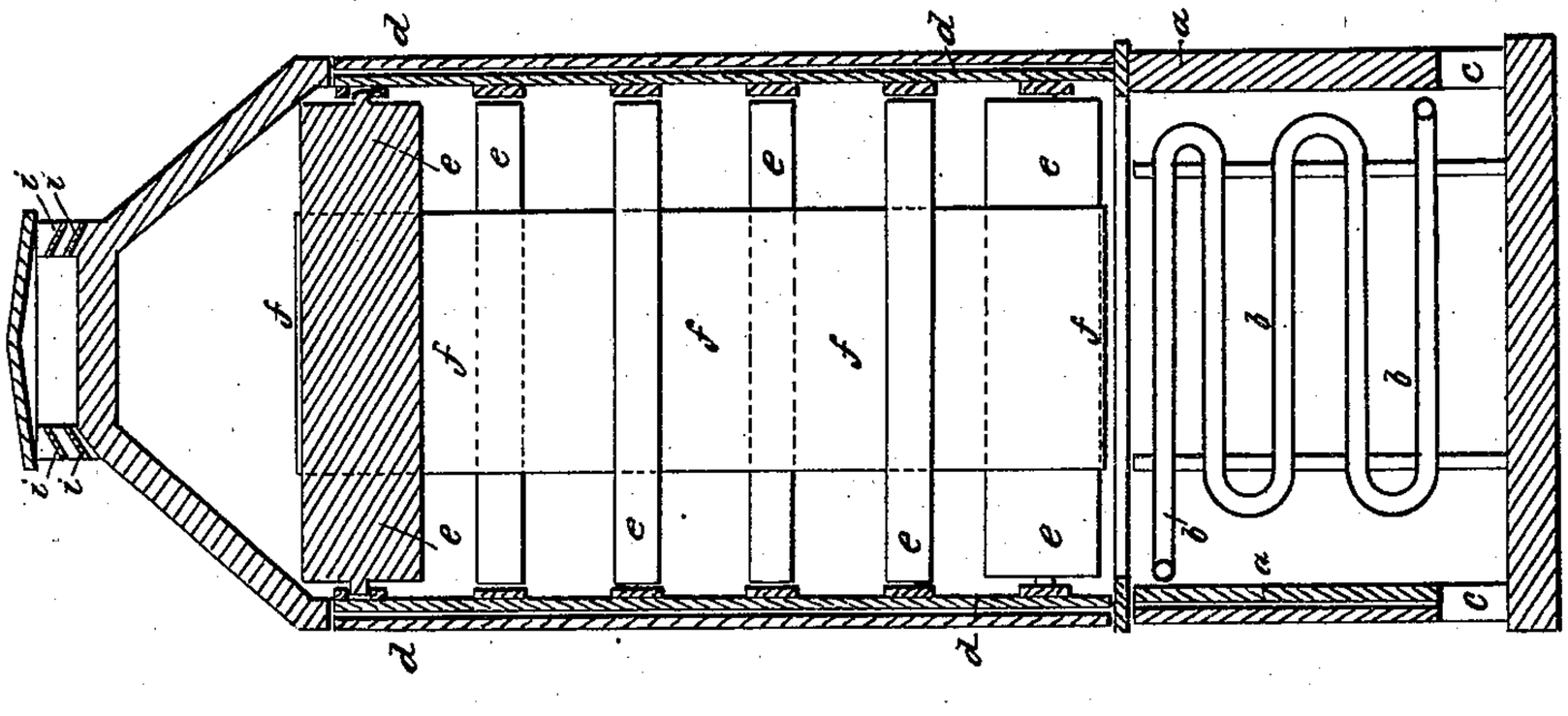
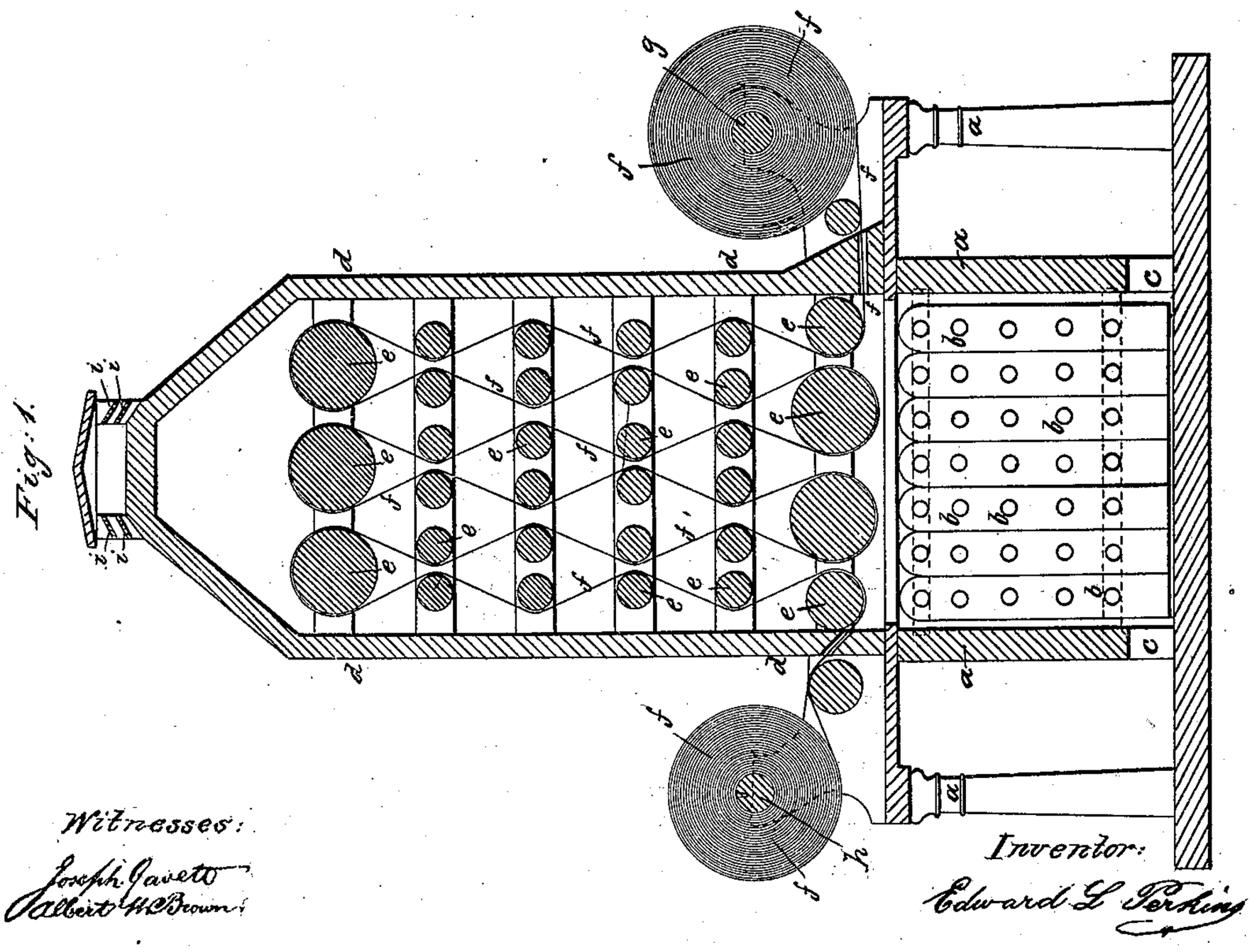


Fig. 1.



Witnesses:

Joseph Gaveto

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Inventor:

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UNITED STATES PATENT OFFICE.

EDWARD L. PERKINS, OF ROXBURY, MASSACHUSETTS.

MACHINERY FOR DRYING PAPER.

Specification forming part of Letters Patent No. 24,328, dated June 7, 1859; Reissued October 9, 1860, No. 1,056.

To all whom it may concern:

Be it known that I, EDWARD L. PERKINS, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented a new and useful Apparatus for Drying Sized Paper and other Analogous Purposes, and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my improvements by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1 is a central, vertical section of my apparatus. Fig. 2 is a central, transverse, vertical section of the same.

The method heretofore most commonly practiced for drying sized paper has been to suspend the sheets in a drying room, through which the atmospheric air was allowed to circulate. But this mode, it will be evident, is subject to and dependent upon the state of the atmosphere, as a moist air "rots" the size and a too violent blast or draft upon the paper also prevents the accomplishment of the desired result, as it is well known, that the animal size used is extremely sensitive, as it were, and can not be properly dried and hardened except under peculiar and the most favorable circumstances. Attempts have also been made for effecting the objects aimed at, by passing the wet paper over heated cylinders, but this is unsuccessful owing in part to the injurious effects of the steam or moisture, thus generated, upon the size.

I have found, by repeated experiments, that in drying sized paper, it is necessary to produce and keep a gentle current or draft of heated air upon the same in such a manner that the steam or moisture evolved from the wet paper must have a rapid and easy escape, and pass out as fast as generated, as its contact with the paper for any considerable duration of time, is entirely destructive to the size, as has always been experienced by paper makers when the atmosphere is damp, many sheets having been spoiled from this cause. In my new apparatus I have combined what I have proved to be the indispensable elements for producing a perfect result, the sized paper being fed vertically through the apparatus, and at the same time exposed to a gentle vertical current of heated atmosphere, which is received through proper inlets at the bottom and passes up between coils of heated pipes or other suitable heating apparatus, and escapes readily and quickly at the top through outlets for the purpose. By this means are avoided the deleterious effects of a strong blast upon the paper, the fluctuations of the atmosphere, and above all, the presence of moisture during the drying operation, as the steam generated can not remain circulating about or in contact with the paper.

a a in the drawings represent the supporting framework of the apparatus, at the bottom of which are placed coils of pipes *b b* heated by steam or otherwise, leaving apertures *c c* at the bottom for the inlet of the atmospheric air which passes up between the coils and thereby becomes heated. Above the heating apparatus and communicating therewith is a box *d d* filled with a series of guiding rolls *e*, *e*, &c., between which the paper *f f* is fed and made to travel vertically, being upon the delivering roll *g*, and received as fast as dried upon the receiving roll *h*.

i, *i*, &c., are outlets at the top of the apparatus through which the heated air, steam, &c., finds an easy escape.

Air is received through the inlets *c*, *c* at the bottom and passes as shown by arrows in the drawings up between the pipes of the heating apparatus, and between the guiding rolls *e e* and out through the apertures *i i*, &c., thereby subjecting the paper to the action of a gentle current of air which carries off all steam and moisture as fast as it is generated, instead of allowing the moisture to circulate about and remain in contact with the paper, which has heretofore been unavoidable by any mode of drying paper before attempted.

Having thus described my improvement what I claim as new and desire to secure by Letters Patent is—

A new mode of drying paper, which consists in feeding the paper from a roll outside of the drying chamber through proper openings to a series of rollers arranged as described, and then conducting it over said rollers vertically through the apparatus and

subjecting it during the passage therethrough to a gentle current of heated air, produced by forming inlets at the bottom for the reception of the atmospheric air which passes up and is heated by a suitable heating apparatus and escapes readily through apertures at the top as set forth and then out of the drying chamber through proper openings to a receiving roller in the manner substantially as described.

EDWARD L. PERKINS.

Witnesses:
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