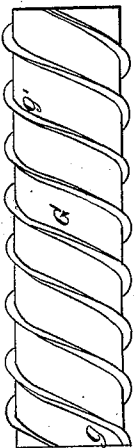


*S. Nowlan.*  
*Paper Mach.*

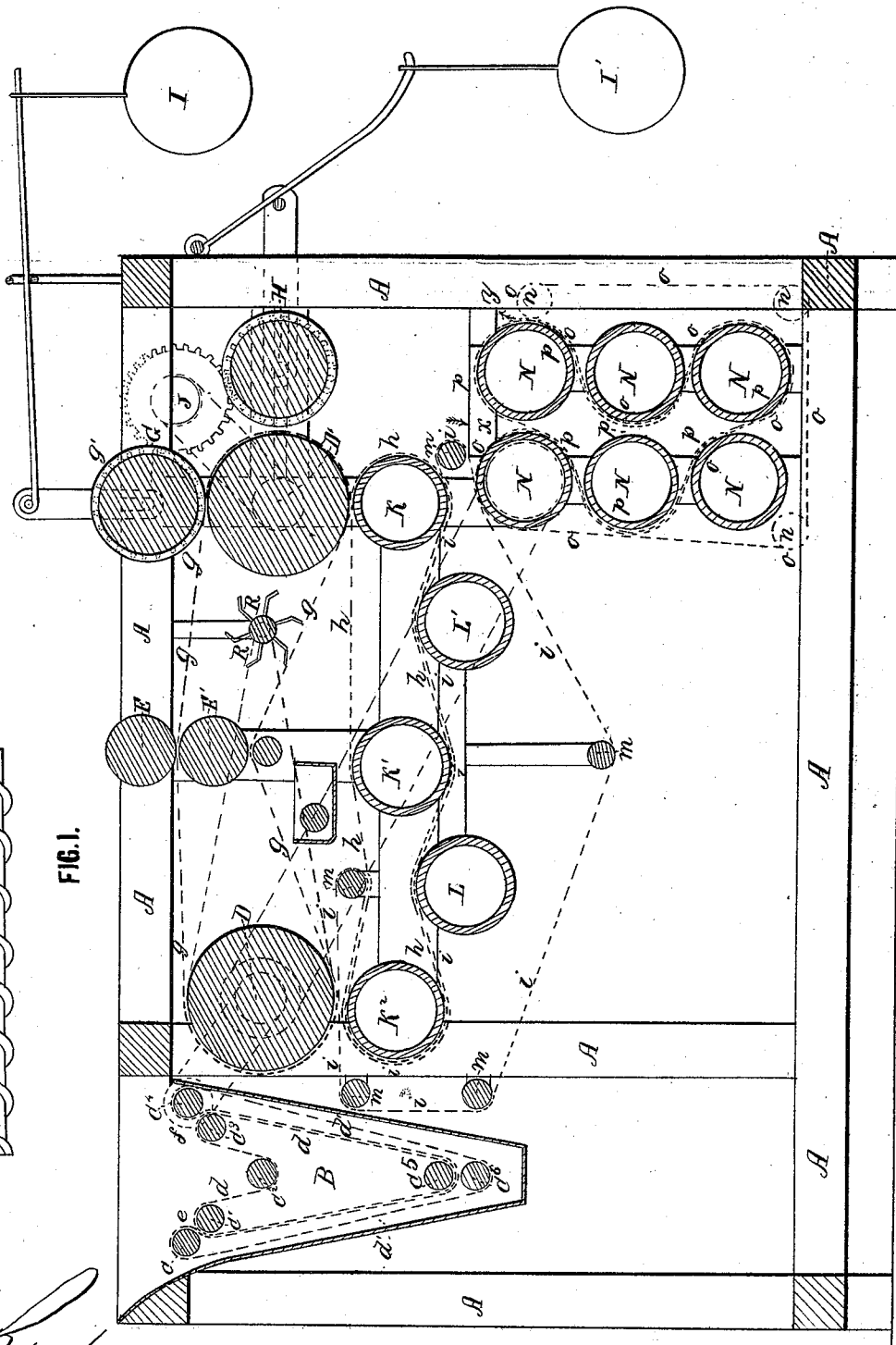
*N<sup>o</sup> 43,860.*

*Patented Aug. 16, 1864.*

**FIG. 2.**



**FIG. 1.**



Witnesses

*J. L. Coombs*

Inventor

*Samuel Nowlan*

# UNITED STATES PATENT OFFICE.

SAMUEL NOWLAN, OF NEW YORK, N. Y.

## IMPROVEMENT IN THE MANUFACTURE OF PAPER.

Specification forming part of Letters Patent No. 43,860, dated August 16, 1864.

*To all whom it may concern:*

Be it known that I, SAMUEL NOWLAN, of New York, in the county and State of New York, have invented a new and useful manufacture of paper, pasteboard, &c., ready to be used for certain purposes for which it is intended; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a machine or apparatus embodying the principles of my invention, and Fig. 2 a detail view.

In the manufacture of envelopes, collars, boxes, labels, stamps, and of many articles made of paper more or less thick and of a shape more or less regular, great loss is incurred from the waste cuttings.

The object of my invention is to produce these articles directly in the manufacture of paper, or, rather, to make paper in the ultimate form or shape they are intended to be reduced to. I have accomplished this by combining with ordinary or suitable paper-making machinery two or more rollers, whose surfaces are provided with cutting edges so arranged as to deliver the made paper in pieces of the form requisite for the purposes intended.

In the accompanying drawings, A is the frame-work of the machine or apparatus, consisting of uprights braced horizontally. Upon this frame-work is arranged in the rear a trough, B, containing a series of rollers, *c*, *c'*, *c''*, *c'''*, *c''''*, and *c'''''*, over which two endless aprons, *d* *d'*, are wound, so as to leave between the point of reception at *e* and the point of delivery at *f* little or no space. The paper-pulp, after being duly condensed and dried by a preceding operation, is carried in continuous-sheet form to *e*, whence it is carried between the two aprons or wrappers *d* *d'* through the sizing which the trough contains, out of the trough at *f*. The sheet now falls on another endless apron, *g*, wound over and around the cylinders D D', and is carried to the squeezing-rollers E E', whose function it is to express the surplus or excess of sizing with which the sheet may be charged. The paper is now in proper condition to be acted upon by the cutters.

The arrangement for cutting the paper is as follows: Heavy metallic cylinders are pro-

vided with cutting edges upon their surfaces. These cylinders are geared to move in unison with the progress of the sheet and press upon the paper as it is delivered between them and the roller D, before referred to. By so pressing the paper sheet becomes indented or cut, and the parts are afterward detached by subsequent operation. The cutting-edge is arranged according to the configuration intended of the paper. Several cutting-cylinders may contribute to cut up the paper. In this instance G and H are the two cutting-cylinders, the former being represented in front elevation in Fig. 2. They are both heavy and press with requisite pressure (regulated by weights I I') upon the sheet. The cutting-edge *g'* winds spirally around the cylinder, and will cut the paper in long strips of a width equal to the distance of the cutting-edges. The roller H is of the same form as the roller G, its cutters running spirally in a reverse direction to those of cutter G. The paper will therefore be cut into squares or parallelograms suitable for making envelopes, and thus accomplish the object of the invention.

It will be understood that the form of the cutters may be varied according to the shape of the article to be produced, and that two or more cutters may co operate to produce the ultimate result.

The cylinders are geared by a cog-wheel, J, common to both, which also gears by means of belts or bands with the cylinder D', the latter with D, while D transmits its motion to the calenders, hereinafter referred to.

The paper, although cut into fragments, still sticks to the apron, because of the pressure and sizing. It is then carried to the apron *h*. To insure the detaching of the sized paper, I use a rapidly-revolving beater, R, which strikes the stretched apron, and thus throws off the paper onto the apron *h*. The latter is carried by steam-heated calenders, K K' K'', and another apron, *i*, is carried by two calenders, L L', and five rollers, *m*. The sheet of paper is then carried between the two last-named aprons, where it is exposed on top and bottom, by passing over these steam-heated calenders, to a high degree of heat, which causes the paper to shrink, and thus to separate at the points where the cutters produced an indentation. This shrinking, how-

ever, does not produce the shriveling of the paper, because it is securely confined between the two aprons, as before described. The paper is finally fed at *x* between two endless aprons, *o* and *p*, passing over the rollers *N* and *n*, as shown in Fig. 1, into a last calender-press composed of six calender-rolls, *N*, and delivered at *y* in distinct pieces of the shape intended.

Having thus described my invention, I claim—

1. The combination, with a paper-making machine of otherwise ordinary or suitable con-

struction, of cutting-rollers, operating in the manner and for the purposes described.

2. In combination with the cutting-rollers, the steam-heated calenders and endless aprons, under the arrangement and for operation as set forth.

I testimony whereof I have signed my name to this specification before two subscribing witnesses.

SAMUEL NOWLAN.

Witnesses:

A. POLLAK,

JOHN S. HOLLINGSHEAD.