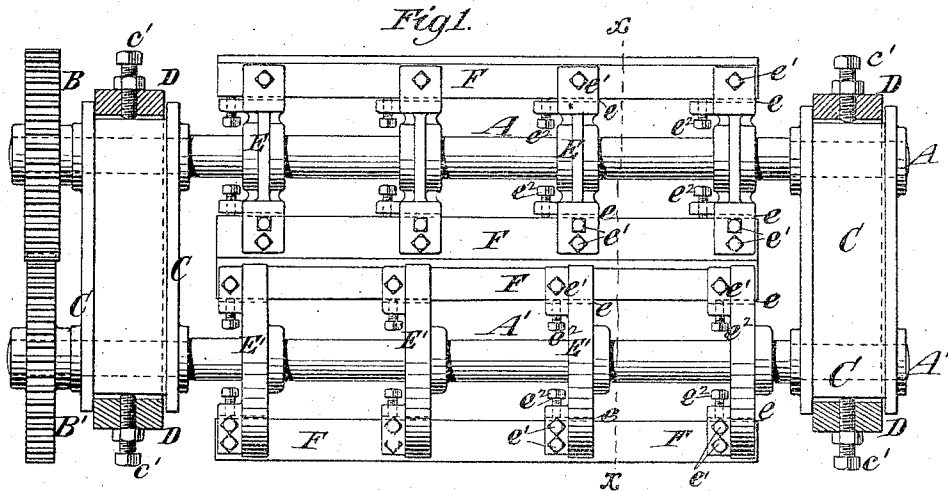
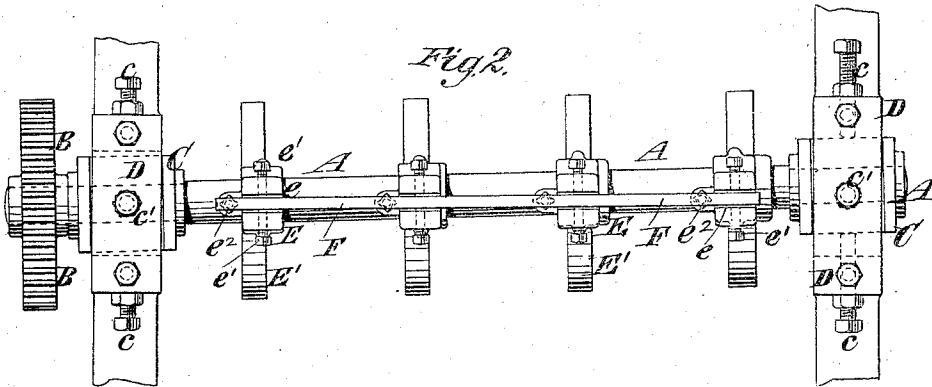
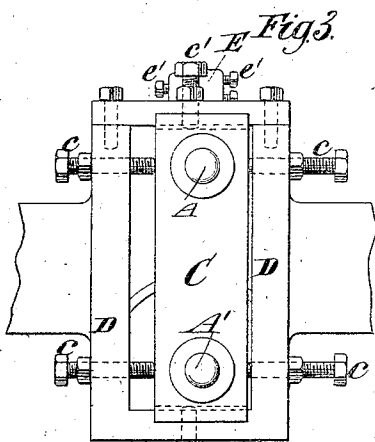


(Model.)

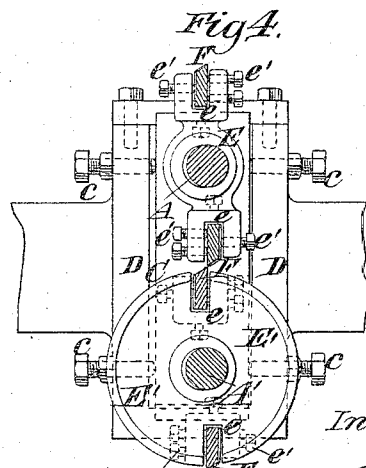
C. B. COTTRELL.  
PAPER CUTTING MACHINE.

No. 391,949.

Patented Oct. 30, 1888.



Witnesses:  
O. Sundgren.  
Emil Herter.



Inventor:  
Calvert B. Cottrell,  
by his atty  
Brown & Hall.

# UNITED STATES PATENT OFFICE.

CALVERT B. COTTRELL, OF STONINGTON, CONNECTICUT.

## PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 391,949, dated October 30, 1888.

Application filed August 25, 1887. Serial No. 247,831. (Model.)

*To all whom it may concern:*

Be it known that I, CALVERT B. COTTRELL, of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Paper-Cutting Apparatus, of which the following is a specification.

My invention relates to that class of paper-cutting apparatus which comprises two rotary cutter-carriers between which a continuous traveling web of paper passes, which are geared together, and which by their rotation cause their cutters or cutting-blades to sever the paper into sheets of desired length. Usually, heretofore, the rotary cutter-carriers which have been geared together have had the cutters or cutting-blades set in a line parallel with their axes so as to cut throughout the entire width of the web of paper at the same instant; but an essential feature of my invention consists in the arrangement of the cutters or cutting-blades spirally or oblique to a line parallel with the axis of the cutter-carrier, so that the two cutters or cutting-blades, which act in conjunction to sever the web, operate with a shearing action in making the cut and while the web of paper is in motion.

The invention will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of a pair of rotary cutter-carriers geared together and including a sectional view of a portion of the framing which supports their bearings. Fig. 2 is a plan of the parts shown in Fig. 1. Fig. 3 is an end view of the parts shown in Fig. 1, and Fig. 4 is a transverse section upon about the plane indicated by the dotted line *x x*, Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A A' designate two parallel shafts which are geared together by pinions or gear-wheels B B', and are supported in bearings C. As here represented, the bearings C of the two shafts are formed in the same piece or block, which is fitted to a suitable housing or framework, D, and in the housings or frames D the bearing-blocks C may be adjusted laterally by means of set-screws *c* in either direction, and they may be adjusted upward and downward by set-screws *c*.

The two shafts A A' form part of rotary

cutter-carriers. The upper cutter-carrier, of which the shaft A forms a part, comprises cross bars or arms E, secured at proper distances apart and in the same plane or nearly the same plane upon the shaft A, and the lower cutter-carrier comprises circular heads or flanges E', which are likewise secured to the shaft A'. It is desirable to have the lower cutter-carrier comprise circular surfaces, such as are supported by the circular heads E', in order that they may support the sheets of paper as they are cut off from the web by the cutters or cutting-blades, hereinafter described, and prevent the paper from dropping down. The circular heads or flanges E' support the paper and contribute to its forward passage through the machine, as would a complete cylinder or roller. The cutter-carriers support the cutters or cutting-blades F, two for each carrier being here represented, and, inasmuch as the rotary cutter-carriers are accurately geared together by the wheels B B', the cutters on the two carriers are brought into proper cutting action twice in each rotation of the cutter-carriers, as will be understood from Fig. 4.

I have represented the cutter-carriers as provided with notches *e*, which form seats wherein the cutters or cutting-blades are placed, the blades being less in thickness than the width of these notches, and the blades are accurately adjusted in position laterally by means of set-screws *e'*, inserted through opposite sides of the notches and bearing against opposite sides of the blades, and their projection from the rotary cutter-carriers is controlled by set-screws *e''*, inserted through the bottoms of the notches.

An essential feature of my invention consists in the arrangement of the cutter or cutting-blades F out of parallelism with the axes of the rotary cutter-carriers, and in lines which are spiral or oblique relatively to a line parallel with such axes. This spirality or obliquity of the cutters or cutting-blades may be secured by making the notches *e* considerably wider than the thickness of the blades F, and then adjusting the set-screws *e'* so as to give the blades the desired degree of spirality, or the notches may be arranged slightly spirally upon the rotary cutter-carriers, as is represented in Fig. 2, the cross-bars or arms E in Fig. 2 not being in absolutely the same plane,

but being arranged in slightly spiral position upon the shaft. This spiral or oblique arrangement of the cutters or cutting-blades is very advantageous, because the cutters or blades as they operate upon the traveling web of paper passing between the rotary cutter-carriers have a shearing cutting action upon the paper, and the spiral arrangement of the blades enables them to operate with a shearing action, and at the same time to cut paper squarely across at right angles to the edges of the web while it is moving or traveling at a steady rate of progression.

Of course the web of paper could be cut squarely across by means of cutters or cutting-blades set straight or parallel with the axes of the rotary cutter carriers; but such cutters or cutting-blades would not operate with a shearing cut, which, as is well known, is very desirable for cutting straight and perfect edges.

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

1. The combination, with two rotary cutter-carriers geared together, of cutters or cutting-blades secured therein in spiral or oblique position, whereby the cutters or cutting-blades in the two carriers are given a shearing action each relatively to the other, substantially as herein described. 25

2. The combination, with two rotary cutter-carriers geared together, and each having notches or cutter-seats  $c$ , of cutters or cutting-blades arranged spirally or obliquely in said notches, the set screws  $c'$ , inserted transversely to the notches and bearing on opposite sides of the cutters or cutting-blades to vary their degree of spirality, and set-screws  $c''$ , inserted through the bottoms of the notches to vary the degree of projection of the cutters or cutting-blades, substantially as herein described. 30 35 40

CALVERT B. COTTRELL.

Witnesses:

C. HALL,  
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