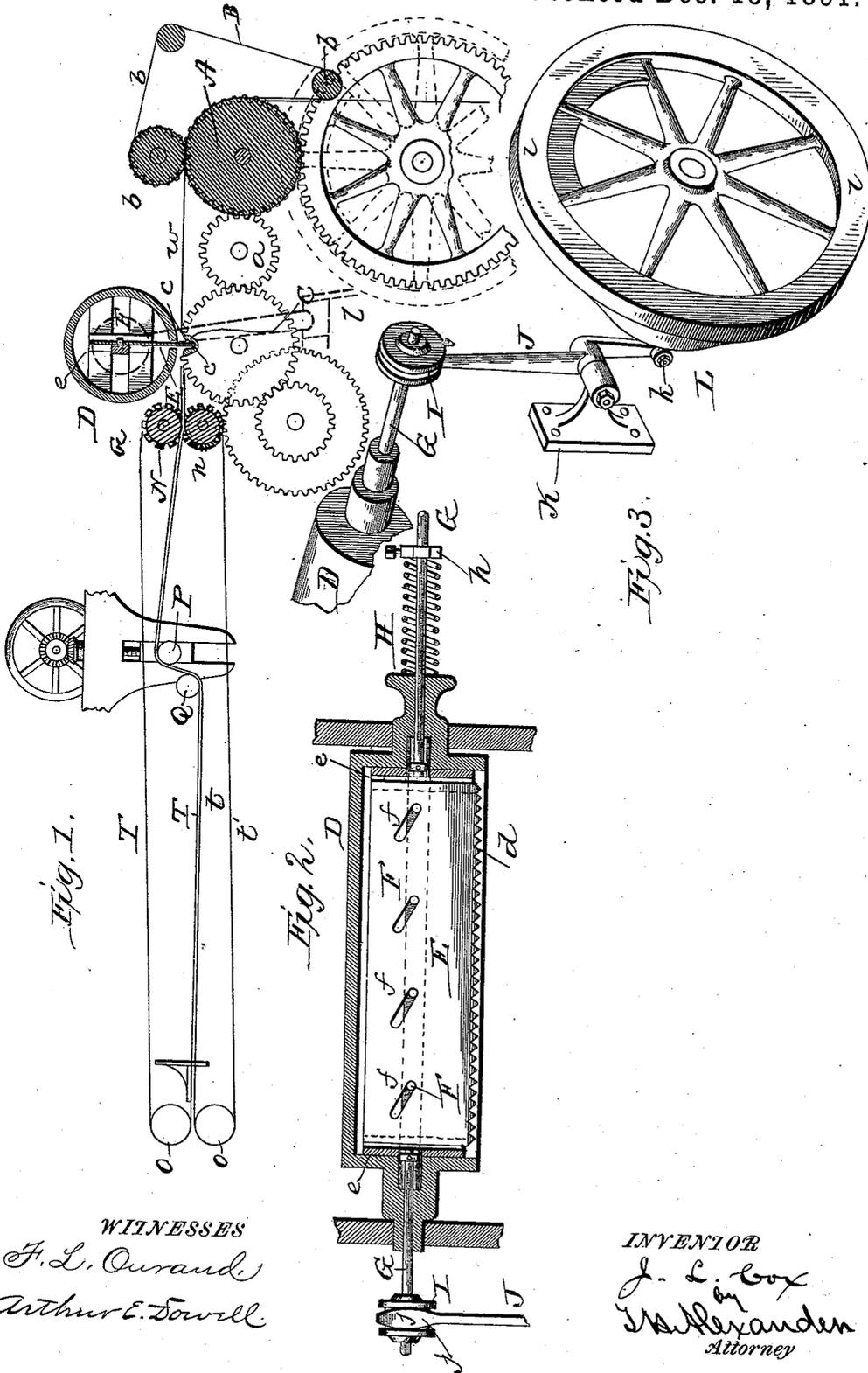


(No Model.)

J. L. COX.  
ROTARY WEB SEVERING MACHINE.

No. 465,427.

Patented Dec. 15, 1891.



WITNESSES  
F. L. Ouraud,  
Arthur E. Towill.

INVENTOR  
J. L. Cox  
by  
W. Alexander  
Attorney

# UNITED STATES PATENT OFFICE.

JOSEPH L. COX, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE DUPLEX  
PRINTING PRESS COMPANY, OF SAME PLACE.

## ROTARY WEB-SEVERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,427, dated December 15, 1891.

Application filed January 19, 1891. Serial No. 378,194. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH L. COX, of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Rotary Web-Severing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a diagrammatical sectional view of my improved mechanism for severing sheets of paper from a web. Fig. 2 is a detail transverse section through the knife-roll. Fig. 3 is a detail perspective view of the knife-operating devices.

This invention is an improvement in mechanism for severing sheets of paper from a continuous web thereof, and is especially designed for use in connection with web-printing presses to sever the sheets after they have been printed; and its objects are to employ rotating cutting-rolls to effect the severing and reduce the size of said rolls, so that the machine can be compactly built, and to enable the knife to be operated, as desired, either at each revolution of the roll or after a predetermined number of revolutions thereof; and to this end the invention consists in the novel construction of the knife-bearing or cutting roll, and in the mechanism for operating the knife, and in certain other novel details of construction and combination of parts, as will be herein after clearly described and claimed.

Referring to the drawings by letters, A designates a delivery or feed roll.

B designates coaxing or delivery tapes running over a triangularly-arranged set of rollers *b b b* and impinging against the face of roll A at one side and coaxing therewith to draw forward the web of paper *w*.

C D represent the cutting-rolls about equal in diameter to roll A, roll C being arranged parallel with roll A and driven therefrom by an intermediate gear *a* and having a longitudinal groove *c* in its periphery. Roll D lies above and parallel with roll C, but is hollow and has a longitudinal slot in one side; and within this roll D is arranged a movable knife and any suitable mechanism by which the blade can be projected through slot *d*, the

knife being directed by suitable guides *e* in the ends of the roll, but lies normally entirely within and concealed by the roll. This knife, as shown, is formed with a series of inclined short slots *f f*, which engage a series of pins F, projecting from a bar G lying axially within the roll and supported in the journals thereof, through which it passes, as shown in Fig. 2; and the bar can be shifted longitudinally within the roll, this shifting causing pins F to ride up or down in slots *f*, and consequently projecting or retracting the knife-edge through slot *d*. The bar is normally held in a position to keep the blade retracted, by means of a coiled spring H, slipped on one end of the bar and bearing against the trunnion of the roll, and against a collar *h* on the rod, as shown. On the other end of the bar is a grooved collar I, which is engaged by the bifurcated end *j* of a lever J, pivoted on a bracket K, attached to the frame of the machine, (not shown,) and the other end of the lever bears a friction-roller *k*, adapted to run over the cam-surface L on the wheel *l*, mounted on a shaft in the machine or press. (Not shown.) The cam-wheel is so arranged and driven by any proper means (not shown) that at the proper moment it will actuate lever J and cause it to shift bar G, thus projecting knife E and causing it to coact with the groove *c* in roll C and sever the web of paper passing between the rolls, and as soon as the lever is released from the cam the spring causes the return of the bar and knife to normal position, so that the web is not again cut until the blade is again projected.

The cam-wheel may be geared to the roll A, if desired, as indicated, and the gearing may be made changeable, so as to enable the time of operation of the knife-blade to be varied, so that more or less of the web will be fed between the rolls before the severing thereof.

The mechanism for driving the cam-wheel and thus controlling the movements of the knife is not an essential part of the present invention, as it may be varied according to circumstances.

N *n* are upper and lower rollers beside rolls C D, and O *o* are similar rollers at the rear end of the press.

T *t* are upper and lower endless tapes run-

ning over rollers N O and *n o*, respectively, and adapted to receive the web of paper or severed sheets after they pass from roll D C, and direct them into a folding-machine or  
5 other proper point of delivery.

P designates a vertically-adjustable roller lying intermediate the rollers N O, and over which the upper portions of tapes *t* and lower portions of tapes T run, and Q is a roller be-  
10 side and below roller P, under which the lower portions of tapes T and upper portions of tapes *t* run. These rollers cause a double bend in the contiguous portions of tapes T *t*, the portion of which between rollers P Q be-  
15 ing almost at right angles to the other portions of the tapes. This bend in tapes T *t* causes them to grip the sheets firmly and draw the web taut at the moment of severing thereof by the knife, so that the cutting of  
20 the web is quick and even. The tapes are driven at a speed about twice as great as the peripheral speed of the roll A by suitable gearing.

The web of paper after being imprinted is  
25 fed forward by rolls A and tapes B between the rolls C D, and when the proper length of paper has passed between the rolls into tapes T *t*, the cam and its coating parts operate knife E, and the web is severed. Tapes T *t*,  
30 moving faster than the roll A, coax the web forward and the bend in the tapes increases the grip or bite of the tapes on the web, and thus just before the knife acts the web is stretched taut, and as soon as severed the  
35 tapes hurry forward the severed sheet out of the way and are ready to coax forward the web. The rolls C D will serve to feed forward the web, and may revolve continuously  
40 any number of times, so long as the knife is not protracted, permitting the rolls to be made quite small and yet operate in cutting long or short lengths of paper from the web. Where the sheets are very short, two or more  
45 knives might be arranged in the cylinder and operated substantially as described, and various modifications might be made in the devices for operating the knife, the essential feature and object of the present invention being to cut various lengths of sheets from  
50 the web by small rolls, preferably having a peripheral speed equal to that of the web.

Having described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. The combination of the paper-web-feed- 55  
ing devices, the cutting-rolls driven there-  
from, one of which is hollow, a concealed blade  
in said hollow roll, the longitudinally-mov-  
able sliding bar mounted in the roll and its  
60 connections for operating said blade, and the  
lever and cam for operating said bar, sub-  
stantially as specified.

2. The combination of the paper-feeding  
devices, the pair of cutting-rolls, one of which  
65 is hollow and has a concealed blade within it  
operated by a longitudinally-movable bar  
mounted in said rolls, and connections be-  
tween the bar and blade with the delivery-  
tapes, the lever and cam for operating said  
70 bar, substantially as and for the purpose de-  
scribed.

3. The combination of the hollow cutting-  
roll, the longitudinally-movable bar therein,  
the movable knife connected to and control-  
75 led by said bar, the spring for controlling  
said bar to hold the knife normally retracted,  
and the mechanism for shifting said bar to  
project the knife, substantially as described.

4. The combination of the hollow roll D,  
80 having a slot *d*, the longitudinally-movable  
spring-controlled bar G therein, the cutter-  
blade E, having inclined slots *f*, engaged by  
studs F on said bar, and the mechanism for  
shifting said bar, substantially as described.

5. The combination, in a paper-web-sever- 85  
ing mechanism, of the roll A, the cutting-rolls  
C D, driven from roll A, the concealed knife  
in roll D, a sliding bar loosely connected to  
said blade, the cam and pivoted lever for  
operating said bar, and the delivery-tapes, all  
90 substantially as and for the purpose set forth.

6. The combination of a cutting-roll having  
an internal movable blade adapted to be pro-  
jected radially of the roll, with a longitu-  
95 dinally-movable bar mounted in the roll,  
connections between said bar and blade,  
whereby the longitudinal movement of the  
bar causes the radial projection or retraction  
of the blade, substantially as and for the pur-  
100 pose set forth.

In testimony that I claim the foregoing as  
my own I affix my signature in presence of  
two witnesses.

JOSEPH L. COX.

Witnesses:

T. H. ALEXANDER,  
S. BRASHEARS.