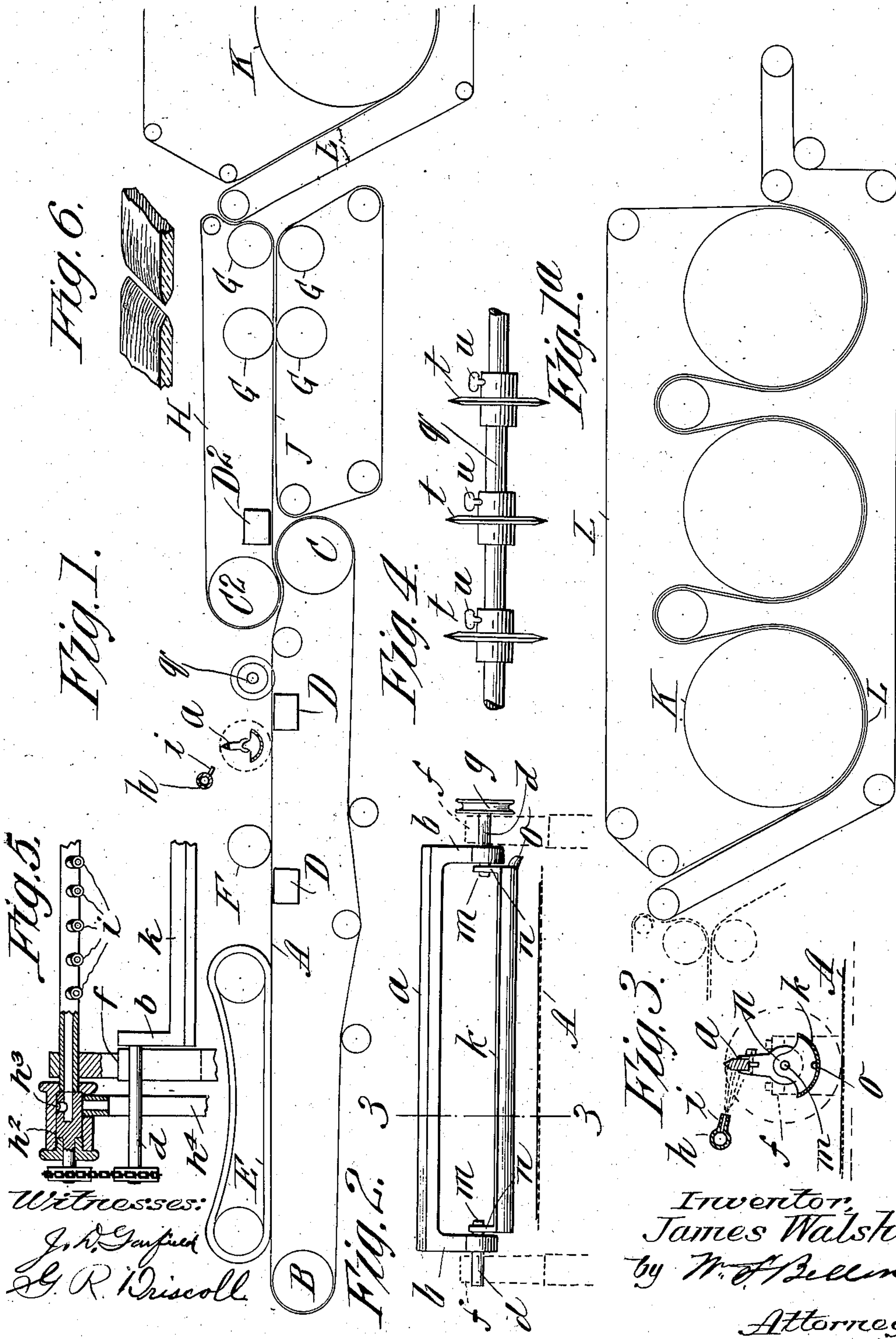


No. 827,197.

PATENTED JULY 31, 1906.

J. WALSH.
PAPER MACHINE.
APPLICATION FILED JULY 6, 1905.



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JAMES WALSH, OF HOLYOKE, MASSACHUSETTS.

PAPER-MACHINE.

No. 827,197.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES WALSH, a citizen of the United States of America, and a resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Paper-Machines, of which the following is a full, clear, and exact description.

This invention relates to paper-machines of the general character and form corresponding to that set forth in Letters Patent of the United States granted to me August 30, 1904, No. 768,834, the present improvements being applicable in conjunction with either a cylinder-machine or a Fourdrinier machine.

A special purpose of this invention is to render it easy to produce separate sheets having some or all of the edges thereof of a character as may be desired, and more especially somewhat irregular and of the common form known as "deckle edges."

The invention comprises, in combination with an endless web-carrier "wire" or apron, which may be the ordinary wire of a Fourdrinier machine, a revoluble blade or severing device, which is mounted for its movements on an axis above and transversely of the wire, having movements or revolutions at suitable speed, and to exert or produce an impingement against the web for separating it at intervals for dividing the latter in its running length into portions of uniform longitudinal dimensions.

The invention, furthermore, includes, in combination with the revoluble blade or severing device arranged and operable as aforesaid, means for subjecting the blade to a cleansing action, employing water therefor, whereby the blade may be relieved of any accumulations of pulp or fiber thereon, and means are furthermore included for the reception of the cleansing-water in such a manner that the latter cannot flow or fall upon the web and its carrier for the impairment of the paper in course of manufacture; and the invention, furthermore, includes, in combination with the foregoing, means for longitudinally dividing the web separated transversely by the aforementioned means, so that sheets of given length and also of widths fractional of that of the original web are produced in the machine while the web is in a still moist condition and before it reaches the couch-rolls and drier.

The improvements pertaining to the paper-machine are illustrated in the accompanying

drawings as combined with the common Fourdrinier machine, in which—

Figures 1 and 1^a represent, in diagram form and in substantially sectional elevation, the important or essential components of the machine and show the provision in combination therewith of the new instrumentalities. Fig. 2 is a front elevation as viewed transversely of the machine of the revoluble blade and the catch-receptacle for the cleansing-water delivered thereupon. Fig. 3 is a cross-sectional view as taken on line 3 3, Fig. 2. Fig. 4 is a front view as seen transversely of the machine of the means for dividing the full-width web on longitudinal lines. Fig. 5 is a view showing the means for giving an intermittent flow of cleansing-water onto the transverse severing device. Fig. 6 is a perspective view of a portion of the paper web as having been acted on by the web-dividing device.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the web-carrier or wire, running, as usual, from and around the breast-roll B to and around one of the couch-rolls C and over the suction-boxes D D.

E represents the deckle; F, the dandy-roll; C², the other couch-roll; G G, the press-rolls; H and J, upper and lower aprons or carriers between the couch-rolls and the drier K, which latter, as here shown, comprises a plurality of drier-drums and sheave-guided aprons, tape, or like carriers L of common kind.

a represents a blade mounted for revolution above the wire A forward of the suction-boxes and between the latter and the guide-rolls. This blade is mounted on arms b b, having rigidly-affixed outwardly-extended aligned journals d d, the common axis of both of which is horizontal and transverse of the plane of movement of the wire, suitable journal-supports f being provided for the journals d at the sides of the machine-frame, and on one of the journals d a pulley g is provided, whereby through a belt to rotate the parts d in the journal-bearings and to impart regular revoluble movements to the blade a. The said blade is so mounted and positioned relatively to the plane of the upper course of the wire as to give impingement thereagainst once in each revolution and separate the web, the speed of movement of the blade being slightly greater through the driving means (which merely requires therefor common

mechanical skill) than the progressive movement of the wire and web, and thereby an absolute division and separation on the transverse line of division of the web is acquired.

5 *h* represents a pipe transversely arranged above the wire in proximity to the course of movement of the revoluble blade, this pipe having a series of nipples or jet-holes *i* directed toward the blade and for distributing
10 water delivered through the pipe *h* for effectually cleansing the blade of any accumulations of pulp or fiber coming thereon by reason of the dividing or severing action of the blade in relation to the wet paper web.

15 In the supply-conduit leading to the pipe *h* a valve is provided, combined with which is automatically-operating means for periodically opening and closing the water-discharge through the pipe, so that the spraying
20 or jet delivery on the blade may be intermittent and timed for operative efficiency and in a manner to avoid water waste and also liability of improperly flooding the traveling web.

25 The valve is shown at *h*², Fig. 5, made hollow and endwise open toward the pipe *h* and with a port *h*³ to open and shut off communication with the water-supply conduit *h*⁴, and the valve is rotated for the water-delivery
30 action by sprocket wheel and chain connection with one of the journals *d* of the revoluble blade.

k represents a trough for catching the water delivered onto the blade and for preventing
35 its falling onto the wire or the web carried thereby, and, as shown, this trough is hung by its suspension-arms *n* on studs or inward extensions *m* from the radial blade-carrying arms *b* and which are axially coincident
40 with the gudgeons or journals *d*.

The waste water may be discharged or removed from the trough *k* in any suitable manner—as, for instance, by having an opening *o*
45 at one end of the trough—so that the water may flow out and over the edge of the web.

While the blade is shown in Figs. 2 and 3 as carried on arms radially extended from and rigid with the journals *d*, the same might be supported on a skeleton or open-work cylindrical frame journaled in the manner
50 shown for the here illustrated supporting-arms and within which skeleton frame the catch pan or trough *k* could be suspended.

In advance of the transverse web-dividing blade and between the same and the couch-rolls is mounted a transverse rotatable shaft
55 *q*, having thereon one or more dividing disk wheels or slitters *t*, these having hubs receiv-

ing set-screws *u* for adjustably positioning these longitudinally-dividing disk knives or
60 slitters to accord with the widths of the web desired. The edges of these disk knives may be sharp or blunt, as either character of edge may be provided thereto to accord with the character of edge desired for the subdivided
65 paper to be produced in the machine. The sheets after passing along on the wire and subjected to the novel mechanism described are carried past the couch-rolls between the adjacent aprons *H* and *J* to the drier *K* and
70 finally delivered from the latter in a stack or otherwise.

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

1. The improvement in a paper-machine, herein described, consisting in the combination with a "wire" or web-carrier, of a device for completely severing the web revoluble
75 about an axis transversely of, and adjacent to, the plane of movement of the carrier and having an effective severing length as great as the width of the wire.

2. In a paper-machine, the combination with the wire, and a revoluble web-severing
85 device, arranged transversely of the wire and as described, of a water-delivery pipe for directing the liquid onto, and for cleansing the web-severing device.

3. The combination with the wire, and a
90 revoluble web-severing device, and a pipe, arranged as described, of a trough arranged transversely above the course of the web, and hung on supports coincident with the journal-supports for the revoluble severing
95 device.

4. The improvement in a paper-machine, herein described, consisting in the combination with a "wire" or web-carrier, of a device for completely severing the web, revoluble
100 about an axis transversely of, and adjacent to, the plane of movement of the carrier, having an effective severing length as great as the width of the wire, and a shaft located beyond the transverse severing device and toward the dry end of the machine, and having
105 one or more disk knives for longitudinally dividing the already cross-severed web-sections.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

JAMES WALSH.

Witnesses:

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