

Title (en)
SELECTABLE PHASE CROSS-WEB PERFORATOR

Title (de)
VORRICHTUNG ZUM QUERPERFORIEREN MIT WÄHLBARER PHASENSTELLUNG

Title (fr)
ENSEMBLE DE PERFORATION SELECTIVE D'UNE BANDE DE PAPIER

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Application
EP 97941031 A 19970911

Priority
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Abstract (en)
[origin: WO9812027A1] A perforation assembly (55) has a backup roller (56) placed on one side of a web (W) and a perf knife (65) rotatably held on the opposite side. The backup roller (56) runs at a constant surface speed substantially matched to that of the web (W) which is tensioned around the roller (56) and supported thereon. A servo motor (5) rotates the perf knife into engagement with the web (W) and with the backup roller (56), which then carries the knife (65) past a nip, perforating the web (W) without loss of speed during the perforation impact. The perf knife (65) rotates out of engagement with the web (W) and continues to accelerate up to a sensor (68) which triggers application of a braking torque by the servo motor (5), bringing it to rest at a home position. The backup roller (56) thus serves as an energy-storage mechanism which engages and maintains the perf knife (65) at the web speed once the perf knife (65) has been moved to the engagement point adjacent the nip region. Because the perf knife (65) is passively synchronized by contact with the backup roller (56), the backup roller (56) and perf knife (65) may rotate on different circumferential diameters without the high inertia of a mechanically coupled gear train. The inertia of the perf knife (65) holder is significantly reduced, allowing a simple servo (5) to quickly move the perf blade (65) to engage with a short response time, to recycle to home position with a relatively quick recovery time, and to be actuated in arbitrary phase relation to the rotation of the backup roller (56) at arbitrarily selected times as the web (W) passes adjacent thereto. A preferred system is an electrographic print system, wherein electronic printer drive signals provide timing synchronization for actuating the knife (65) to form perforations in the printed web (W). Position sensors (68, 69) synchronize the motor braking and locking power cycles, allowing fast response and high accuracy perforation of webs moving at one hundred feet per minute or more.

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