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- (71) Applicant: MITSUBISHI DENKI KABUSHIKI KAISHA
 Tokyo 100-8310 (JP)

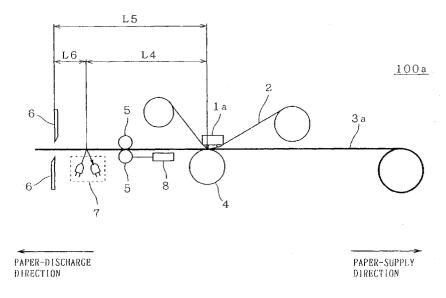
- (72) Inventors:
 - Ishigouoka, Hirokazu
 Chiyoda-ku, Tokyo 100-8310 (JP)
 - Sakui, Masato Chiyoda-ku, Tokyo 100-8310 (JP)
 - Takeshita, Tomoyuki Chiyoda-ku, Tokyo 100-8310 (JP)
- (74) Representative: Burke, Steven David et al
 R.G.C. Jenkins & Co.
 26 Caxton Street
 London SW1H 0RJ (GB)

(54) Printing device for use with a continuous sheet of paper

(57) A printing device that produces printed pieces of paper having no blank is provided, which can precisely position the print to contents on the back side of the printing paper. A mark (36) is provided in a blank area (38) on the back side of printing paper (3a). A sensor (7) senses the mark (36), whereby the position of a regular-form print area (37) adjacent to the blank area (38)

on the printing paper (3a) can be recognized. A thermal head (1a) and a cutter (6) print the printing paper (3a) and cuts the blank area (38) away on the basis of the sense output. Accordingly, it is possible to produce a printed piece of paper having a desired print on the front side and a regular-form print on the back side printed without positional misalignment and without blank in the feed direction, with the mark (36) removed therefrom.

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EUROPEAN SEARCH REPORT

Application Number EP 98 30 4428

| Category | Citation of document with i of relevant pass | ndication, where appropriate, sages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.CI.6) | |
|------------------------------|---|---|--|--|--|
| Χ | US 3 875 861 A (STA | | 1,4,8,9 | B41J11/46 | |
| Υ | 8 April 1975 * the whole documer | nt * | 2,3,7 | | |
| Y | PATENT ABSTRACTS OF JAPAN vol. 004, no. 041 (M-005), 29 March 1980 & JP 55 011818 A (DAINIPPON PRINTING CO LTD), 28 January 1980 * abstract * | | 2 | | |
| Y | | M-1391), 31 March 1993 DAINIPPON PRINTING CO | 7 | | |
| X | US 3 648 911 A (PEK 14 March 1972 * the whole documen | · | 1,8,9 | | |
| Х | EP 0 388 763 A (HITACHI LTD ;HITACHI VIDE ENG (JP)) 26 September 1990 * abstract * * column 11, line 56 - column 13, line 2 figure 8 * | | 5 | TECHNICAL FIELDS SEARCHED (Int.Cl.6) | |
| Y | | | 3,6 | B41J | |
| X | PATENT ABSTRACTS OF JAPAN vol. 006, no. 204 (M-164), 15 October 1982 & JP 57 110479 A (FUJITSU KK), | | 8,9 | | |
| Υ | 9 July 1982 * abstract * | | 6 | | |
| X | EP 0 368 324 A (CAN * figure 4 * | ON KK) 16 May 1990 | 5 | | |
| | | -/ | | | |
| | The present search report has | been drawn up for all claims | | | |
| | Place of search | Date of completion of the search | Ma | Examiner | |
| - | BERLIN | 16 February 1999 | | elsen, M | |
| X : part Y : part docu | ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anot iment of the same category notocical background | E : earlier patent doc after the filling dat her D : document cited in L : document cited fo | ument, but pub e the application of other reasons | lished on, or 1 | |



EUROPEAN SEARCH REPORT

Application Number EP 98 30 4428

| Category | Citation of document with indicat of relevant passages | tion, where appropriate, | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.CI.6) | |
|--|---|--|--|--|--|
| X | PATENT ABSTRACTS OF JA vol. 013, no. 425 (M-8 21 September 1989 & JP 01 163085 A (HIT. 27 June 1989 * abstract * | 73), | 8,9 | | |
| A | US 5 488 458 A (BENEDION AL) 30 January 1996 * abstract * | - CT LAWRENCE R ET | 1-9 | | |
| А | PATENT ABSTRACTS OF JAI vol. 012, no. 222 (M-7: & JP 63 019283 A (CANO 27 January 1988 * abstract * | 12), 24 June 1988 | 1-9 | | |
| A | US 5 464 289 A (BEAUDRY 7 November 1995 * abstract * | (WALLACE J) | 1-9 | TECHNICAL FIELDS SEARCHED (Int.Cl.6) | |
| | The present search report has been d | | | | |
| BERLIN | | Date of completion of the search 16 February 1999 | Niel | Examiner PISEN, M | |
| CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure | | E : earlier patent docur after the filing date D : document cited in t L : document cited for | T : theory or principle underlying the invention E : earlier patent document, but published on, or | | |

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 98 30 4428

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

16-02-1999

| | Patent document ed in search repo | | Publication date | | Patent family member(s) | | Publication date |
|----|--------------------------------------|---|---------------------|----------------------|--|--------|--|
| US | 3875861 | A | 08-04-1975 | BE GB SE SE | 848334 1424634 398560 7405567 | A B | 16-03-19 11-02-19 27-12-19 07-04-19 |
| US | 3648911 | Α | 14-03-1972 | NONE | _ | | |
| EP | 0388763 | A | 26-09-1990 | JP DE DE US | 2239961 69016803 69016803 5266972 | D T | 21-09-19 23-03-19 29-06-19 30-11-19 |
| EP | 0368324 | A | 16-05-1990 | JP DE DE US | 2128855 68927846 68927846 5587733 | D T | 17-05-19 17-04-19 09-10-19 24-12-19 |
| US | 5488458 | Α | 30-01-1996 | JP | 8305094 | A | 22-11-19 |
| US | 5464289 | Α | 07-11-1995 | U\$ | 5518329 | A | 21-05-19 |

FOPM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82