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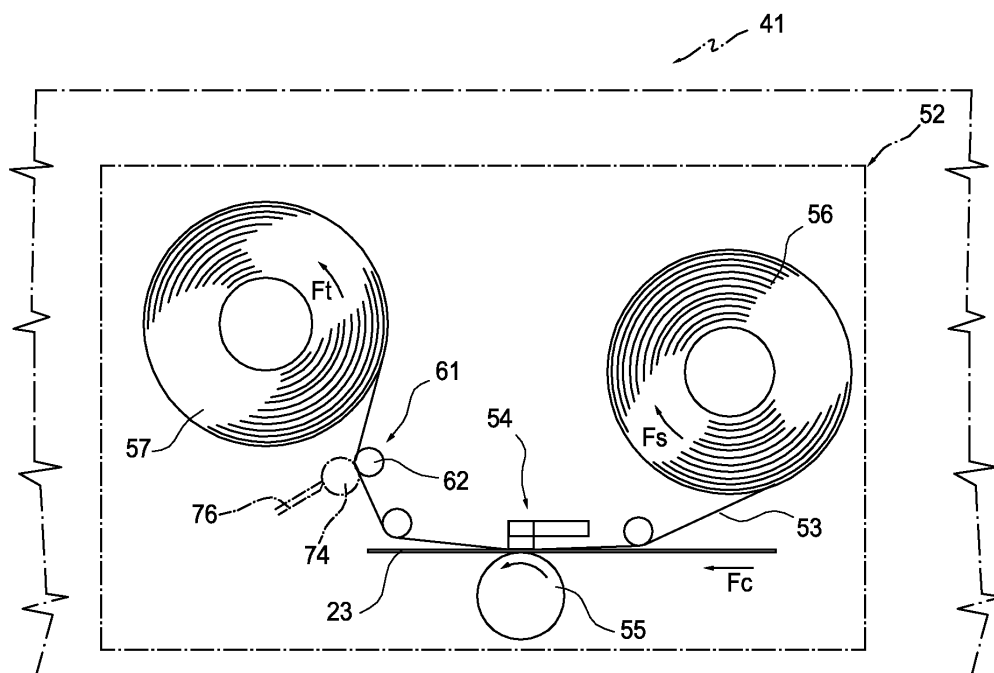
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(54) **Method and device for removing traces of personal data in an equipment for issuing identification cards or badges**

(57) A method for removing traces of personal data in an equipment (41) for issuing identification cards or badges (23), in which the equipment includes a printing unit (52) having an ink transfer ribbon (53) for printing visible data on the card to be issued. The method comprises, after printing, a removal step to make non-readable the traces remaining on the ribbon after the transfer

of the ink on the card. The device (61) for removing the traces comprises removal members (62) operative on the ink transfer ribbon (53), after the printing of the data, to make non-readable the traces remaining on the exhausted ribbon (53). In a thermal ink transfer ribbon, the removal occurs by heating of the ink up to liquefaction, with spread of the melted ink in the spaces left by the transferred ink.



**Fig. 3**

## Description

**[0001]** The present invention relates to a method and a device for removing traces of personal data in an equipment for issuing identification cards or badges.

**[0002]** More specifically, the invention has as object a method and a device for removing traces of printed personal data in an equipment for issuing identification cards or badges, exemplarily but not exclusively Electronic Identity Cards.

**[0003]** The identification cards or badges comprise a support of plastic material with format of a credit card, including a chip integrated in the support, fields with optical and/or magnetic layers storing information readable by electronic devices and fields printed on the support with information in clear and visually readable regarding anagraphic data, personal data and a photograph of the card holder.

**[0004]** Recently, rules of homologation for a card of this type, as Electronic Identity Card -Carta di Identità Elettronica- (CIE) of the Italian Republic have been defined, for replacing the paper Identity Card on the Italian territory.

**[0005]** The printing of visible data on an Electronic Identity Card presents problems, mainly due to the nature of the plastic support. Printing techniques without intermediate inking ribbon, as inkjet printing, are not suitable for the printing of these cards in view of: poor adherence to the plastic, limited resistance to the use of the inks of these technologies and owing to the high number of nozzles necessary for the parallel printing of the various lines of the card.

**[0006]** The thermal transfer printing process solves many of the adherence and resistance problems but, for high reliability, the ink ribbons must be of single use type. However, these ribbons give rise to problems regarding the protection against unauthorised use of the personal data printed on the issued cards. As a matter of fact, the visible data of the Electronic Identity Card are readable, in negative, on the exhausted ribbon used during the printing process.

**[0007]** The protection of the secrecy of the printed data needs particular handling and treatment of the exhausted ribbons, while the elimination of the traces regarding the printed data must be effected through controlled destruction of the exhausted ribbons. In smaller measure, also the multi-use ink transfer ribbons do not guarantee that the printed data are non-readable; therefore the multi-use ribbons must be handled in a way similar to the ones of single-use.

**[0008]** Object of the invention is to accomplish a method and device for removing traces of printed personal data in equipments for issuing identification cards or badges and using ink transfer ribbons.

**[0009]** According to this object, the method for removing the traces of printed personal data applies to an equipment for issuing identification cards or badges, comprising a printing unit having an ink transfer ribbon for printing

visible data on the card to be issued, this method involving, after printing, a removal step to make non-readable the traces remaining on the ribbon after the ink transfer on the identification card.

**[0010]** The device for removing traces of printed personal data applies to an equipment for issuing identification cards or badges, comprising a printing unit with an ink transfer ribbon for the printing of visible data, and in which this device provides removal members operative on the ribbon, after the printing of the data, to make non-readable the traces remaining on the ribbon.

**[0011]** The method and the device of the invention are particularly suitable for the use in equipment having printing devices with thermal ink transfer ribbons.

**[0012]** The characteristics of the invention will become clear from the following description, made merely by way of non-restrictive example, with the aid of the attached drawings, in which:

Figs. 1 a and 1b represent, in a schematic way, an identification card and, in detail, an Electronic Identity Card (Carta di Identità Elettronica);

Fig. 2 shows a schematic view of an equipment for issuing identification cards;

Fig. 3 is a schematic view of an ink transfer printing device for the equipment of Fig. 2, including a device for removing traces of personal data according to an embodiment of the invention;

Fig. 4 shows a schematic view of an ink transfer printing device for the equipment of Fig. 2, with a device for removing traces of personal data according to another embodiment of the invention; and

Fig. 5 represents a schematic view of an ink transfer printing device for the equipment of Fig. 2, having a device for removing traces of personal data according to a further embodiment of the invention.

**[0013]** The Figs. 1 a and 1 b represent, in a schematic way, the face 21 and the back 22 of an identification card and, in detail, an Electronic Identity Card 23.

**[0014]** Specifically, the card 23 includes a support 24, of plastic material, for instance polycarbonate, shaped as a credit card, including various fields with information treatable and readable by electronic devices, and with information printed on the support and visually readable.

**[0015]** For the information treatable and readable by electronic devices, the card 23 includes a chip 26 integrated in the support 24 and, on the back 22, contact areas 27 of the chip 26, a hologram 28 and a coded optical band 29 writable and readable by laser. For the visually readable information, the card 23 includes, on the face 21, fields 31, 32, with anagraphic (registry) data and other personal data and a field 33 with a colour photograph of the card holder. Further data are visible in a field 34 of

the back 22.

**[0016]** An equipment for issuing cards 23 is represented with 41 in Fig. 2. In extreme synthesis, the equipment 41 operates on a virgin support of the card 23 and comprises a device 42 for initializing the chip 26, a printing device 43, a cardflipping mechanism 44, a lamination device 46, and an electronic control unit (not shown in the drawings). In particular, the flipping mechanism 44 provides to invert the card 23 after the printing of the data on a first surface and moves back the inverted card to the printing device 43 for the printing on the opposite surface. The equipment 41 is, for instance, of CPS 72 type, manufactured by CTS Electronics S.p.A. and homologated for issuing Electronic Identity Cards -Carte di Identità Elettroniche- (CIE) of the Italian Republic.

**[0017]** As for the present invention, the printing device 43 includes a sublimation printing unit 51 for the printing of colour fields and a thermal transfer printing unit 52 for the printing of monochromatic fields.

**[0018]** The printing unit 52 (Fig. 3), of known type, includes a single-use printing ribbon 53 and a thermal head 54. The ribbon 53 is held in contact with the card 23 through the thermal head 54 for selectively transferring the ink of the ribbon on the surface of the card. The head 54 has a series of point resistors arranged along a row, which is in contact with the ribbon 53, substantially perpendicular to the direction of movement of the ribbon during the printing process.

**[0019]** The ribbon 53 has a support film coated with an ink of wax type: when the resistors of the head 54 are actuated, the produced heat causes the ink to be transferred from the ribbon surface to the card surface. For the various fields, the number and the position of the points of each printing line are selected on control of the electronic unity of the equipment, in synchronism with the longitudinal movement of the ribbon and the card. A transport roller 55 drags the card 23 in the direction of the arrow Fc, while the ribbon 53, is maintained adhering to the card 23 and taut with respect to the head 54 between a supply spool 56 and a take-up spool 57, in a manner known per sé.

**[0020]** During the printing process, the printing ribbon 53 unwinds from the supply spool 56 in the sense of rotation Fs, passes in front of the head 54 and transfers on the card 23 the ink points regarding the information to be printed; the exhausted ribbon 53 winds on the take-up spool 57 in sense of rotation Ft. The process is repeated incrementally up to completion of the information to be printed on the face 21 and, after the inversion of the card, on the back 22. As result, the visually readable fields are printed on the card 23, while corresponding traces, as points devoid of ink, remain on the surface of the exhausted ribbon. Consequently, the printed information can be read, in negative, on the ribbon 53, downstream of the head 54.

**[0021]** According to the method of the invention, the traces of the transferred and recognizable points of the exhausted ribbon are made non-readable, in a removal

step. In the specific case of a thermal transfer ribbon, the ink still present in the exhausted ribbon is heated up to melting and spread in the spaces left empty by the transferred points. In alternative, the ink present in the ribbon is transferred on an auxiliary support of cancellation and, by here, optionally removed, for instance through a blade.

**[0022]** Figure 3 shows an embodiment of device for removing traces of personal data, represented with 61, in relationship with the printing unit 52.

**[0023]** The device 61 includes an intermediate roller 62 interposed between the thermal head 54 and the take-up spool 57 and on which bears the exhausted ink ribbon 53. The roller 62 can be formed by a tubular element, which is suitable heated, for instance, through internal resistors (not shown), so as to liquefy the ink still present in the exhausted ribbon and to spread and redistribute the ink more or less uniformly on the ribbon. Consequently, the areas deprived of the ink during the printing phase will result non-recognizable.

**[0024]** Instead of a heated roller, the spread of the ink can be obtained, after the printing process, by irradiation, through an infrared rays lamp arranged transversally to the ribbon 53, downstream of the printing head 54.

**[0025]** Figure 4 shows another embodiment of device for removing traces of personal data, represented with 71, in relationship with the printing unit 52 itself.

**[0026]** The device 71 includes a pinch roller 72 rotatable on a fork member 73 and which bears on the most external coil of the take-up spool 57. Also the roller 72 is heated, for instance through internal resistors, for melting the ink present in the exhausted ribbon. The ink will spread, more or less uniformly, on the adjacent void areas of the ribbon and on the underlying coils, so making non-recognizable the areas deprived of the ink in the printing phase.

**[0027]** A further embodiment of device for removing traces of personal data is represented with 81 in figure 5, in relationship with the printing unit 52.

**[0028]** In the device 81, the transport roller 55 is rotatable on a fork member 82, in turn actuatable by an electromagnet, not shown in figure, for withdrawing the roller 55 from the head 54 up to a position Rm.

**[0029]** In the use, after the printing of the data, the control unit provides supplementary printing cycles, in which the roller 55 is spaced away from the head 54 and all the resistors of the head in contact with the ribbon 53 are actuated. Moreover, the supply spool 56 is rotated in sense - Fs, whereby recovering the section of the ribbon used for the printing. At the same time, the take-up spool 57 rotates in the sense - Ft, allowing the ink present on the ribbon to spread in the spaces left by the transferred points, with removal of each trace of the information printed on the card 23.

**[0030]** As variant, the transport roller 55 can be maintained fixed and the head 54 can transfer the ink on the roller, with function of removal. Thereafter, a suitable blade can remove the ink from the transport-removal roller itself. In a further variant, an auxiliary removal support,

alternative to the transport roller can be provided: The remaining ink of the ribbon is transferred to the removal support and, optionally, the transferred ink can be removed by a blade.

[0031] The technique of the exhausted ribbon 53 pressing on a contrast roller 74 and the removal of the ink through a blade 76, can be applied to the device 61, as indicated in dash and dot line of Fig. 3.

[0032] It is clear that, in the process of removal of the printed data from the ink ribbon, the heated auxiliary element, or the printing head are controlled in a way sufficient to spread or to make the ink to be transferred without jeopardizing the integrity of the supporting film of the ribbon.

[0033] Naturally, the principle of the invention remaining the same, the embodiments and the details of construction of the method and device for removing traces of personal data in an equipment for issuing identification cards or badges can be widely varied with respect to what has been described and illustrated, by way of non-limitative example, without by this departing from the scope of the present claimed invention.

[0034] As a further example, the removal of the traces can be applied, with suitable modifications, also to the colour printing unit 51 and to the case in which the printing process takes place by indirect ink transfer through an intermediate film.

## Claims

1. A method for removing traces of personal data in an equipment (41) for issuing identification cards or badges (23), in which the equipment includes a printing unit (52) having an ink transfer ribbon (53) for printing visible data (31, 32, 34) on the card to be issued, the said method being **characterized in that** it comprises, after printing, a removal step to make non-readable the traces remaining on the ribbon after the ink transfer on the card.
2. Method according to claim 1, **characterized in that** the ink transfer is of thermal type and in which the removal step of the traces takes place by heating of the non-transferred portions of the ink.
3. Method according to claim 2, **characterized in that** the removal of the traces takes place by spread of the heated ink in the spaces left by the transferred ink.
4. Method according to claim 2, **characterized in that** the removal takes place for ink transfer on an auxiliary support (74), or on coils (57) of the exhausted and rewound ribbon (53).
5. Method according to claim 2 or 3 or 4, **characterized in that** the ink is transferred by means of an auxiliary heater (62, 72).
6. Method according to claim 2, or 3, or 4, in which the printing unit (52) comprises a dot thermal head (54), the said method being **characterized in that** the heating is effected through supplementary printing cycles of the thermal head (54) on the exhausted ribbon.
7. A device (61, 71, 81) for removing traces of personal data in an equipment (41) for issuing identification cards or badges (23), in which said equipment includes a printing unit (52) with an ink transfer ribbon (53) for printing visible data on the card (23), the said device being **characterized in that** it comprises removal members (62, 72, 54) operative on the ink transfer ribbon (53), after the printing of the data, to make non-readable the traces remaining on the exhausted ribbon (53).
8. Device according to claim 7, **characterized in that** the ink transfer is of thermal type and in which the removal members (62, 72, 54) operate by heating of the non-transferred portions of the ink.
9. Device according to claim 8, **characterized in that** the removal members are pre-set for spreading the ink in the spaces of the exhausted ribbon (53) left by the transferred ink.
10. Device according to claim 8, **characterized in that** the removal members (62, 72, 54) are pre-set to transfer the ink on an auxiliary support (74, 55), or on coils (57) of the exhausted and rewound ribbon (53).
11. Device according to claim 8, 9 or 10, **characterized in that** the removal members include an auxiliary heater (62, 72).
12. Device for removing traces of personal data according to claim 8, 9 or 10, in which the printing unit (52) of said equipment includes a printing thermal head (54), the said device being **characterized in that** the heating of the non-transferred portions of ink is effected through the said printing thermal head.

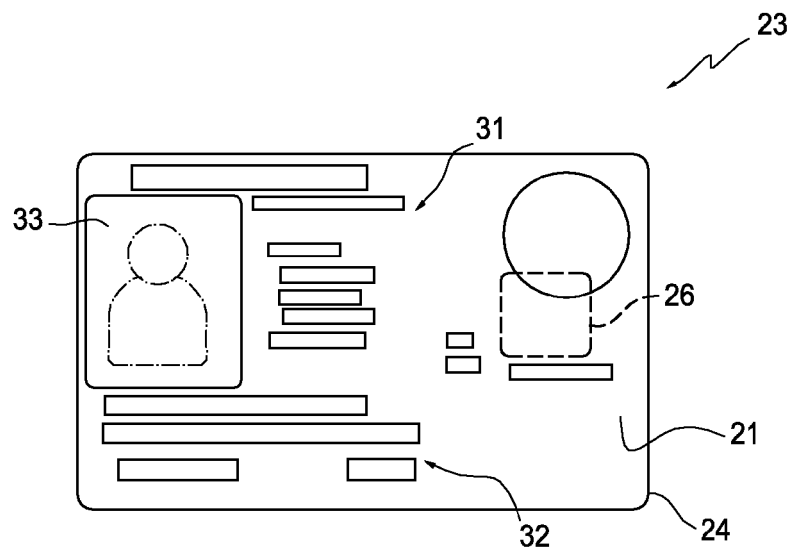


Fig. 1a

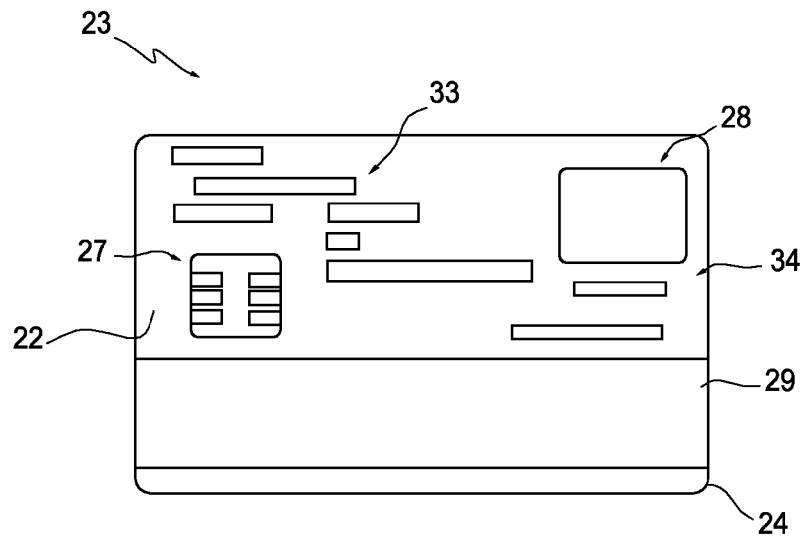


Fig. 1b

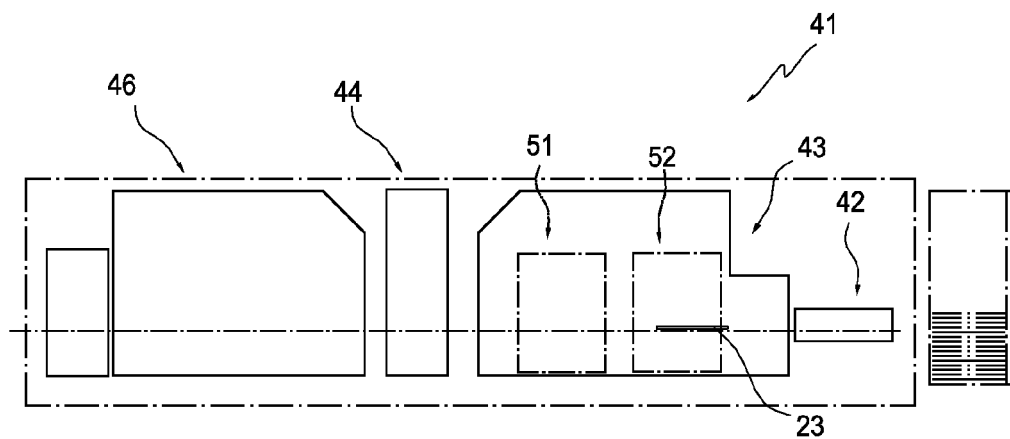


Fig. 2

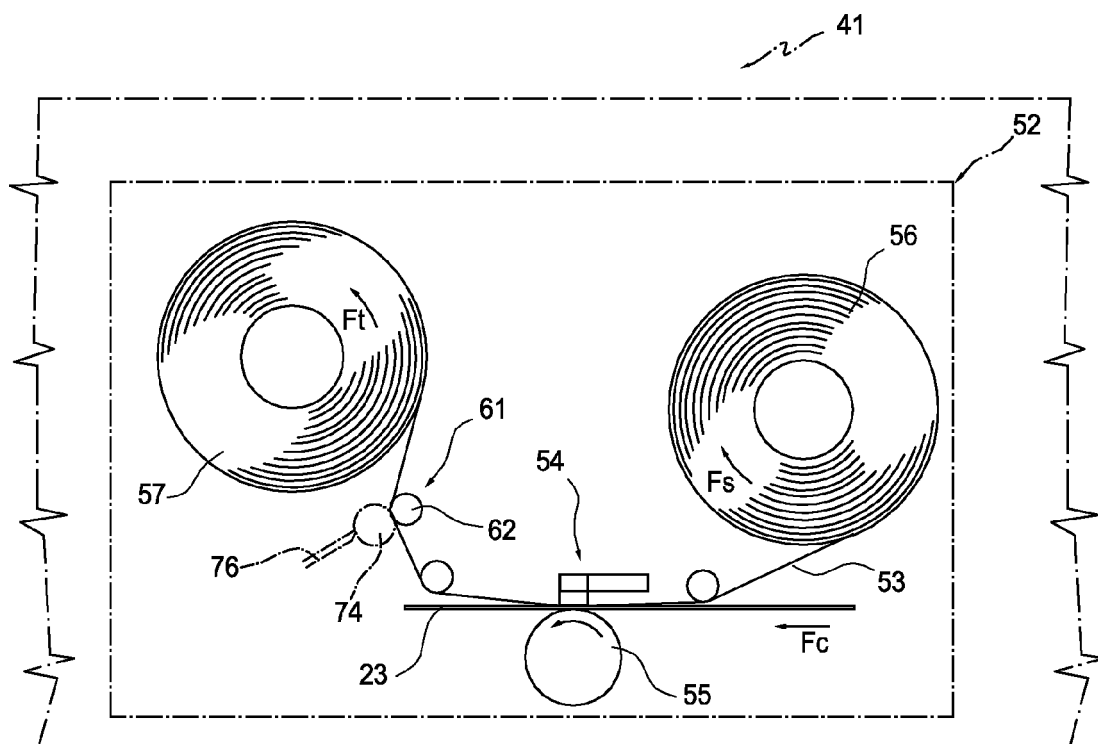
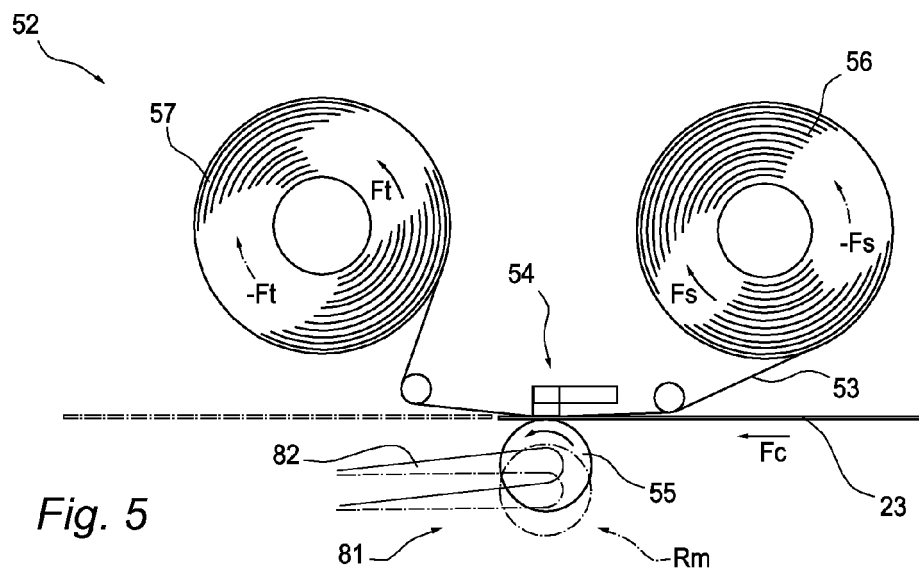
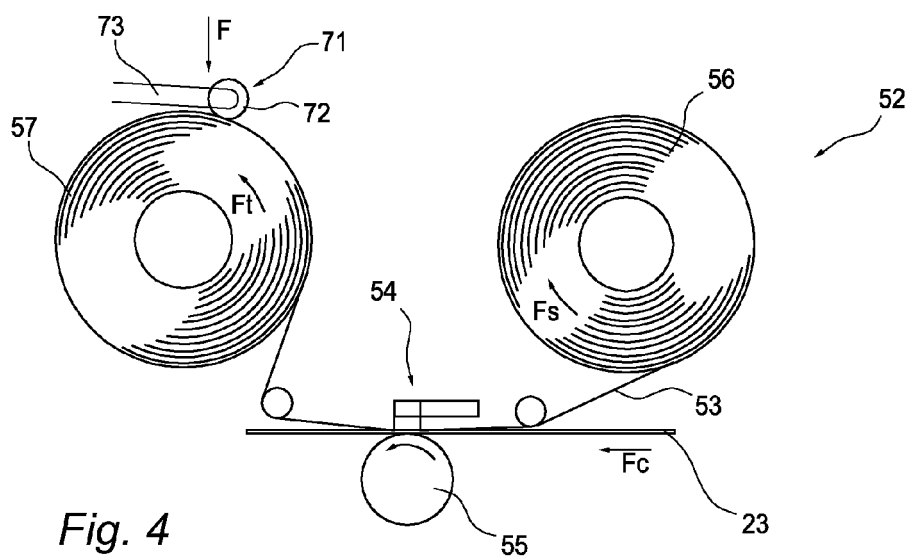


Fig. 3





European Patent  
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# EUROPEAN SEARCH REPORT

Application Number  
EP 07 11 3537

DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 15 November 2007	Examiner Joosting, Thetmar
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EPO FORM 1503 03.82 (P04C01)



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

EP 07 11 3537

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