

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number: 86304257.8

(51) Int. Cl.⁴: B 41 L 19/00

(22) Date of filing: 04.06.86

(30) Priority: 04.06.85 IE 1375/85
28.02.86 US 834634

(43) Date of publication of application:
10.12.86 Bulletin 86/50

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

(71) Applicant: **SECURITY IMPRINTER CORPORATION**
2, East Frederick Street
Walkersville Maryland(US)

(72) Inventor: **Edwards, David George**
29 Claremont Court
Dublin 11(IE)

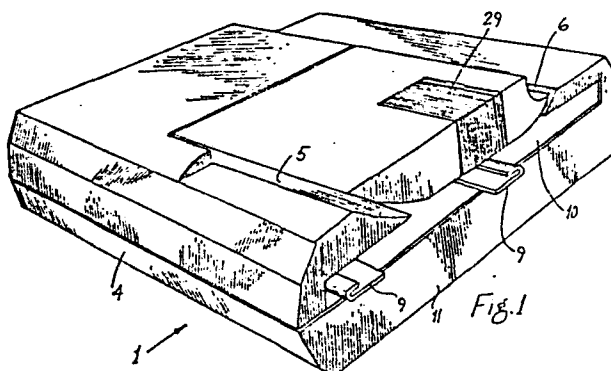
(72) Inventor: **Finlay, Gerard**
112 Woodlands
Navan County Meath(IE)

(72) Inventor: **Boyle, David Joseph**
60 Castletown
Leixlip County Kildare(IE)

(74) Representative: **Barlow, Roy James et al,**
J.A.KEMP & CO. 14, South Square Gray's Inn
London WC1R 5EU(GB)

(54) **Imprinter Apparatus.**

(57) Imprinter apparatus (1) for imprinting characters from a credit card (2) onto a docket (3) comprises a housing (4) having an entrance opening (5) and a discharge opening (6) for introduction and discharge of the docket (3). The credit card (2) is mounted on a carrier member (8) which also includes merchants details (18) and a date roller (19) and includes an upstanding abutment (20) which is abutted by a leading edge of the docket (3). The carrier member (8) is driven by a drive roller (31) powered by an electric motor (45) under an inked roller (30) for imprinting data onto the docket (3). A substantially cylindrical periphery (38) of a pair of disc members (37) drive the carrier member (8) forward through an imprinting stroke, return of the carrier member (8) being provided by a flattened portion (39) which allows the carrier member (8) to returned to a start position by a return spring (40). The presence of docket (3) on the carrier member (8) is sensed by a microswitch 50 which energises the motor (45). The docket (3) is delivered from the imprinter (1) by a guide finger (55) which extends into a groove (56) in the carrier member (8) when the carrier member (8) approaches a discharge end position to move underneath the docket (3) and direct it through the exit opening (6).



The present invention relates to imprinter apparatus for imprinting characters from a character imprint source member such as a credit card onto an imprint recording document such as a docket.

5 According to the invention, there is provided imprinter apparatus for imprinting characters from a character imprint source member such as a credit card onto an imprint recording document such as a docket, the apparatus comprising:

10 a housing having entrance and exit openings for introduction and discharge of a document,

imprinting means in the housing,

a carrier member movable within the housing along a feed path between a document receiving start position
15 and a document discharge position, and

drive means to drive the carrier member along the feed path to imprint characters from an imprint source member onto a document.

In one embodiment of the invention, the drive means
20 comprises a drive roller, the carrier member being passed between the drive roller and the imprinting means

to imprint characters from a source member onto a document.

In one embodiment of the invention the drive roller has a substantially cylindrical periphery interrupted by a flattened portion, the cylindrical portion of the drive roller engaging the carrier member to advance the carrier member between the start and discharge positions and the flattened portion allowing relative sliding movement of the carrier member for return of the carrier member to the start position.

In another embodiment of the invention return means are provided for returning the carrier member to the start position. Preferably the return means comprises a tensator spring.

In another embodiment of the invention the drive roller is driven by an electric motor. Preferably the motor is coupled to the drive roller by a drive belt.

In a further embodiment of the invention document sensor means are provided to sense the presence of a document on the carrier member to drive the drive roller. Preferably the sensor means comprises a microswitch which is positioned to be activated by a document to energise the motor for driving the carrier

member through an imprinting stroke.

In another embodiment of the invention means are provided for retaining the microswitch activated during an imprinting stroke. Preferably the means
5 comprises a cam on the drive roller shaft, the cam profile being arranged so that when the carrier member completes an imprinting stroke the microswitch is deactivated.

In another embodiment of the invention, the carrier
10 member comprises a platen having a substantially flat upwardly facing surface for receiving a character imprint source member and having means for receiving and positioning an imprint recording document.
Preferably the means for receiving and positioning an
15 imprint recording document comprises an abutment extending upwardly from a document supporting surface to be abutted by a leading edge of a document upon insertion through the entrance opening. Advantageously, the sensor means is positioned to be activated by
20 portion of a document upon reaching the abutment surface.

In a further embodiment of the invention guide means are provided for guiding the carrier member along the feed path to pass the character source member and document between the drive roller and the imprint means.

Preferably the guide means comprises a guide slot engaged by an elongate protrusion extending from the carrier member. In a still further embodiment of the invention, means to deliver an imprinted docket from
5 the apparatus through the exit opening is provided. Preferably the delivery means comprises a guide finger member extending into a groove in the carrier member when the carrier member approaches a discharge end position to move underneath the document and direct it
10 through the exit opening.

In another embodiment of the invention, the imprint means is provided by an inked roller. Preferably the roller is mounted in a cassette which is releasably mounted in the housing.

15 In a particularly preferred embodiment of the invention there is provided document activated imprinter apparatus for imprinting characters from a credit card or the like forming a thin character bearing imprint member onto a document, comprising a housing having entrance and exit
20 openings for introduction and discharge of a document onto which characters are to be imprinted, imprinting means in the housing including a printing station having an imprint roller and a drive roller between which the document and imprint member are to be advanced, a carrier
25 member movable within the housing along a feed path

between a document receiving start position and a document discharge end position for advancing a document fed onto the carrier member through said entrance opening between said rollers, means on said
5 carrier member for receiving and positioning the imprint member adjacent the document disposed on the carrier member to imprint characters on the document upon their passage between said rollers, means for guiding and reciprocating said carrier member and the
10 document and imprint member thereon along said feed path, powered drive means including a document sensor to sense the presence of a document at a support position on the carrier member to drive said drive roller through a carrier member imprint stroke along
15 said feed path, means for guiding the document through said exit opening upon the carrier member reaching said end position, and means for returning the carrier member to said start position.

The invention will be more clearly understood from the
20 following description of an embodiment thereof, given by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of imprinter apparatus according to the invention;

Fig. 2 is a perspective view of the imprinter apparatus with the housing and carrier member shown in broken lines;

Fig. 3 is a side view of the apparatus of Fig. 1 in an initial or reset position;

Fig. 4 is a side view of the apparatus of Fig. 1 with the carrier member disposed along its path of travel in an imprinting cycle;

Fig. 5 is a side view of a detail of the apparatus of Fig. 1;

Fig. 6 is a perspective view of the carrier member of the apparatus of Fig. 1; and

Fig. 7 is an end view of the carrier member of Fig. 5 in the direction of the arrow A.

5 Referring to the drawings, there is illustrated imprinter apparatus according to the invention, indicated generally by the reference numeral 1 for imprinting characters from a character imprint source member such as a credit card 2 onto an imprint recording document
10 such as a docket 3. The credit card 2 is illustrated in Figs. 3 and 4 in full lines and in broken lines in

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Fig. 6, while the docket 3 is illustrated in broken lines in Figs. 3 to 6.

The apparatus 1 comprises a housing 4 having an upper entrance opening 5 and an upper discharge opening 6 for introduction and discharge of the docket 3. The credit card 2 is mounted on a carrier member comprising a platen 8 portion 9 of which projects, in use, through an elongate slot 10 in a side wall 11 of the housing 4.

The carrier member 8 includes a credit card receiving sheet metal member 15 having a pair of side members 16 which are bent upwardly inwardly to engage the side edges of the credit card 2. Characters identifying details of the merchant using the apparatus are provided at 18 on the platen 8. A date roller 19 is also provided on the platen 8. Means for receiving and positioning the docket 3 comprises an abutment 20 extending upwardly from a document supporting surface 21 to be abutted by a leading edge of the docket 3 upon insertion of the docket 3 through the entrance opening 5. The carrier member 8 runs in a guide comprising a substantially V-shaped slot 25 formed in a metal support 26. The slot 25 engages an elongate protusion 27 extending from one side 28 of the carrier member 4.

The carrier member 8 is driven beneath an imprint means

which in this case is provided by an inked roller 30 for imprinting the characters onto the docket 3. The inked roller 30 is provided in a cassette 29 which, if desired may be disposable once the ink has been used up. Where the roller 30 or cassette 29 is disposable, it is envisaged that the cassette 29 may be attached to the apparatus by a suitable quick release mechanism. A drive means comprising a drive roller 31 drives the carrier member 8 beneath the inked roller 30. The drive roller 31 which is driven by an electric motor 45 through a belt drive 46 comprises a shaft 32 rotatable in a bearing (not shown) in the metal support 26 and in a bearing 33 mounted in a support bracket 34 which is secured to the support 26 by screws 35. A pair of disc members 37 fast on the shaft 32 bear on the carrier member 8 to drive it beneath the inked roller 30.

As will be apparent particularly from Figs. 3 and 4 each of the disc members 37 has a substantially cylindrical periphery 38 interrupted by a flattened portion 39, the cylindrical portion 38 engaging the carrier member 8 to advance the carrier member 8 between start and discharge positions and the flattened portion 39 allowing relative sliding movement of the carrier member 8 for return of the carrier member to the start position illustrated in

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Fig. 3. Return means for returning the carrier member 8 to the start position is in this case provided by a coiled tensator spring 40 mounted on a shaft 41 in a housing 43 and connected to the underside of the carrier member at 42. As the drive roller 31 rotates in the direction of the arrow B in Fig. 1 the cylindrical or rounded portion 38 of the periphery of the disc members 37 drives the carrier member beneath the inked roller 30 and the radius of the discs is such as to press the carrier member 8 against the inked roller 30 with sufficient force to cause imprinting of the characters from the credit card 2, merchants characters 18 and date roller characters 19 onto the docket 3. Further, the circumference of the rounded portion 38 of the disc members 37 is such that one revolution of the drive roller 31 completes one pass of the carrier member beneath the ink roller, thus on completion of a pass imprinting is complete, the docket 3 is discharged through the discharge opening 6 and the carrier member 8 is returned to the start position ready to receive another docket.

Document sensor means to sense the presence of a docket 3 on the carrier member 8 the drive roller 31 in this case comprises a microswitch 50 which is positioned to be activated by portion of the docket 3 upon reaching the abutment 20 to energise the motor 45 for driving

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the carrier member 8 through an imprinting stroke.

Referring to Fig. 5, means for retaining the micro-switch 50 activated during an imprinting stroke thereby maintaining drive on the drive roller 31 is provided by a cam 51 on the shaft 32 of the drive roller which operates a pivotal member 52 which bears on an arm 53 of the microswitch to retain the micro-switch 50 activated. An adjusting screw 54 is provided on the pivotal member 52 to bear on the arm 53. When the drive roller 31 has completed one revolution, the profile of the cam 51 is such that the pivotal member 52 is released from the microswitch arm 53, thus deactivating the microswitch 50 and turning off the motor 45.

Referring particularly to Figs. 3 and 4 delivery means for delivering an imprinted docket 3 from the imprinter apparatus 1 through the exit opening 6 is in this case provided by a guide finger member 55 which extends into a groove 56 in the carrier member 8 when the carrier member approaches a discharge end position to move underneath the docket 3 and direct it through the exit opening 6.

In use, the credit card 2 is entered into side members 16 of the carrier member 8 through the slot 10 in the

side wall 11 of the housing 4. The carrier member 8 will be in the position illustrated in Fig. 3. The docket 3 is then inserted through the entrance opening 5 in the housing 4 until it reaches the abutment 20 of the carrier member 8. Just as the docket 3 reaches the abutment 20 it triggers the microswitch arm 53, thereby activating the motor 45 and in turn the drive roller 31. As the drive roller 31 rotates, the rounded portion 38 of the circumference of the discs 37 drive the carrier member 8 between the drive roller 31 and the inked roller 30 in the direction of the arrow C of Fig. 4. The cam 51 and pivotal member 52 retains the microswitch 50 active, and in turn the motor 45. On completing a pass of the carrier member 8 between the inked roller 30 and the drive roller 31, the microswitch 50 is deactivated, and thus the motor 45. At this stage the flattened portion 38 of the discs 37 is adjacent the carrier member 8. The carrier member 8 is thus free to slide between the inked roller 30 and the driver roller 31, and the spring 40 thereby returns the carrier member 8 to its reset position illustrated in Fig. 3. While the carrier member 8 is being driven between the drive roller 31 and the inked roller 30, the characters on the credit card 2, the merchant's identification characters 18 and date roller characters 19 are imprinted onto the docket 3. During this operation as the carrier member 8 moves in the

direction of the arrow C of Fig. 4, the guide finger
55 directs the docket 3 into the exit opening 6 and
the docket 3 is discharged through the opening 6. The
credit card 2 is then removed, and the apparatus 1 is
5 ready for the next operation.

It will be appreciated that while a particular drive
means has been described for driving the carrier
member between the print roller, any other suitable
drive means could be used. For example, instead of
10 having a pair of discs, an elongated roller could be
used, and in this case it is envisaged that portion
of the periphery of the roller would be flattened.
Although needless to say, it will be appreciated that
it is not necessary for the drive roller to be
15 flattened. For example, in certain cases it is
envisaged that a roller rotatable about an eccentric
axis could be used. Also, it is envisaged that a
roller of circular cross section rotating about a
concentric rotational axis could be used if desired.
20 In this case, however, it is envisaged that either a
release means to release the pressure between the
drive roller and the inked roller would be provided to
allow for the return of the carrier member, or
alternatively, the roller could be driven in reverse to
25 return the carrier member.

It will also of course be appreciated that in certain cases the inked roller could be driven and it would drive the carrier member. This, it will be appreciated, would eliminate the need for the drive roller.

5 Further, it will be appreciated that any means other than an electric motor could be used to drive either the drive roller or the print roller. In certain cases, it is envisaged that a hand crank could be used.

Further, it will be appreciated that means other than a
10 tensator spring could be used to return the carrier.

It is envisaged that a coil spring may be used. It is envisaged that many other shapes and constructions of carrier member could be provided, as indeed could many other shapes and constructions of housing, as well as
15 entrance and exit openings.

Furthermore, it will be appreciated that while the apparatus has been described for imprinting embossed information on a credit card onto a docket, the apparatus could be used for imprinting information from
20 any suitable imprint source member onto any type of document.

It will be appreciated that the drive roller means may be provided with a friction gripping means for movement of the carrier member. For example, in the case of the disc members 37 described above an O-ring or the like may be
5 fitted over the outer periphery and may be located in a groove or recess in the disc member.

It will further be appreciated that means may be provided for adjusting the pressure applied by the imprint roller. For example, the imprint roller may be eccentrically
10 mounted to allow pressure adjustment.

In addition, it will be appreciated that alignment means may be provided for alignment of the drive roller means with respect to the imprint roller. For example, the drive roller may be mounted in bearings, at least one
15 of which is eccentric to allow adjustment of the drive roller.

Further, it will be appreciated that the imprinter apparatus according to the invention may be used in association with means for validating a credit card.

CLAIMS

1. Imprinter apparatus (1) for imprinting characters from a character imprint source member such as a credit card (2) onto an imprint recording document such as a docket (3), the apparatus comprising:

a housing (4) having entrance (5) and exit openings (6) for introduction and discharge of a document (3),

imprinting means (30) in the housing (4),

a carrier member (8) movable within the housing (4) along a feed path between a document receiving start position and a document discharge position, and

drive means (31) to drive the carrier member (8) along the feed path to imprint characters from an imprint source member (2) onto a document (3).

2. Imprinter apparatus as claimed in claim 1 wherein the drive means (31) comprises a drive roller (31), the carrier member (8) being passed between the drive roller (31) and the imprinting means (30) to imprint characters from a source member (2) onto a document (3).

3. Imprinter apparatus as claimed in claim 2 wherein the drive roller (31,37) has a substantially cylindrical periphery (38) interrupted by a flattened portion (39), the cylindrical portion (38) of the drive roller (31,37) engaging the carrier member (8) to advance the carrier

member (8) between the start and discharge positions and the flattened portion (39) allowing relative sliding movement of the carrier member (8) for return of the carrier member (8) to the start position.

5 4. Imprinter apparatus as claimed in claim 3 wherein return means (40) are provided for returning the carrier member (8) to the start position.

 5. Imprinter apparatus as claimed in claim 4 wherein the return means (40) comprises a tensator spring
10 (40).

 6. Imprinter apparatus as claimed in any of claims 2 to 5 wherein the drive roller (30) is driven by an electric motor (45).

 7. Imprinter apparatus as claimed in claim 6 wherein
15 the motor (45) is coupled to the drive roller (30) by a drive belt (46).

 8. Imprinter apparatus as claimed in any of claims 2 to 7 wherein document sensor means (50) are provided to sense the presence of a document (3) on the carrier
20 member (8) to drive the drive roller (31).

 9. Imprinter apparatus as claimed in claim 8 when dependent on claim 6 or 7 wherein the sensor means (50)

comprises a microswitch (50) which is positioned to be activated by a document (3) to energise the motor (45) for driving the carrier member (8) through an imprinting stroke.

5 10. Imprinter apparatus as claimed in claim 9 wherein means (51,52) are provided for retaining the microswitch (50) activated during an imprinting stroke.

11. Imprinter apparatus as claimed in claim 10 wherein the means comprises a cam (51) on the drive roller
10 shaft (32), the cam profile being arranged so that when the carrier member (8) completes an imprinting stroke the microswitch (50) is deactivated.

12. Imprinter apparatus as claimed in any preceding claim wherein the carrier member (8) comprises a platen
15 having a substantially flat upwardly facing surface (15) for receiving a character imprint source member (2) and having means (20) for receiving and positioning an imprint recording document (3).

13. Imprinter apparatus as claimed in claim 12 wherein
20 the means (20) for receiving and positioning an imprint recording document comprises an abutment (20) extending upwardly from a document supporting surface (21) to be abutted by a leading edge of a document (3) upon insertion through the entrance opening (5).

14. Imprinter apparatus as claimed in claim 13 when dependent on claim 8 wherein the sensor means (50) is positioned to be activated by portion of a document (3) upon reaching the abutment surface (20).

5 15. Imprinter apparatus as claimed in any of claims 2 to 14 wherein guide means (25,27) are provided for guiding the carrier member (8) along the feed path to pass the character source member (2) and document (3) between the drive roller (31) and the imprint means (30).

10 16. Imprinter apparatus as claimed in claim 15 wherein the guide means comprises a guide slot (25) engaged by an elongate protrusion (27) extending from the carrier member (8).

15 17. Imprinter apparatus as claimed in any preceding claim wherein means (55,56) to deliver an imprinted document from the apparatus through the exit opening (6) is provided.

20 18. Imprinter apparatus as claimed in claim 17 wherein the delivery means (55,56) comprises a guide finger (55) member extending into a groove (56) in the carrier member (8) when the carrier member (8) approaches a discharge end position to move underneath the document (3) and direct it through the exit opening (6).

19. Imprinter apparatus as claimed in any preceding claim wherein the imprinting means (30) comprises an inked roller (30).

20. Imprinter apparatus as claimed in claim 6
5 wherein the roller (30) is mounted in a cassette (29) which is releasably mounted in the housing (4).

21. Document activated imprinter apparatus (1) for imprinting characters from a credit card (2) or the like forming a thin character bearing imprint member onto a
10 document (3), comprising a housing (4) having entrance (5) and exit (6) openings for introduction and discharge of a document (3) onto which characters are to be imprinted, imprinting means (30) in the housing including a printing station having an imprint roller (30) and a drive roller
15 (31) between which the document (3) and imprint member (2) are to be advanced, a carrier member (8) movable within the housing (4) along a feed path between a document receiving start position and a document discharge end position for advancing a document (3) fed onto
20 the carrier member (8) through said entrance opening (5) between said rollers (30,31), means (20) on said carrier member (8) for receiving and positioning the imprint member adjacent the document (3) disposed on the carrier member (8) to imprint characters on the document (3)
25 upon their passage between said rollers (30,31), means for guiding and reciprocating said carrier member (8) and the

document (3) and imprint member (2) thereon along
said feed path, powered drive means (31) including a docu-
ment sensor(50) to sense the presence of a document (3)
at a support position on the carrier member (8) to drive
5 said drive roller (31) through a carrier member imprint
stroke along said feed path, means for guiding (55,56)
the document through said exit opening (6) upon the
carrier member (8) reaching said end position, and
means for returning the carrier member (8) to said
10 start position.

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