

Description

This invention relates to portable printers.

Portable printers are widely used in a variety of environments including retail stores, hospitals, laboratories and goods handling facilities. Often they are used to print bar codes which serve as identity tags for the articles to which they are attached. Portable printers are to be distinguished from hand-held printers which, although easily carried, have special constructional features (such as a hand grip) to enable them to function (i.e. to perform the steps of printing, dispensing and applying a label) while held in the hand of an operative.

Bar codes are particularly useful because they facilitate the use of fully automatic in-and-out systems and, in some instances, do away with the need for price labels on products offered for sale.

In medical and scientific applications, bar codes are useful in a variety of areas including patient identification, specimen collection and distribution, distribution of valuable commodities such as pharmaceuticals, and document tracking; equally, they are useful in management applications, e.g. accounting, supplies management, time recording/allocating and tracking of personnel and of documents.

In order to apply labels to articles which are required to carry a bar code identification, it is common to use one or more label printers. These may be hand-held, portable or fixed in position. Typically, a supermarket will employ three stationary printers which will be utilised by up to ten people. Other places of use, e.g. laboratories, may have just a single fixed printer. Strips or labels will be printed and taken to the product or article to be labelled and either applied by hand or by means of a label dispenser. An alternative to the use of a fixed printer is to use a hand-held printer.

Portable printers have much more capacity and versatility than hand-held printers, since they are less susceptible to design constraints imposed by the need to maintain minimum size and comfortable hand usage. They are also more convenient to use compared to fixed printers, since they can be carried to the point of use.

According to one aspect of the present invention, there is provided a portable printer which comprises a housing; a printing unit including a printing zone through which (in use) a substrate onto which indicia are to be printed is passed; means for supplying said substrate to said printing unit; and means for inputting data to control the nature of the indicia printed at said printing unit, characterised in that said housing includes a main frame which serves to support the functional components of the printer; a protective casing which fits over said frame; and a front cover removably

attached to the remainder of the housing, the inside face of said cover supporting or containing a keyboard or keypad which constitutes or forms a component of said means for inputting data.

In the various embodiments described herein, the printing unit may take the form of an ink jet print unit; or a thermographic print unit; or a thermal transfer print unit. In several advantageous embodiments, the portable printer has a multi-mode print unit.

Preferably, the main frame is a sheet metal frame, e.g. a steel frame. The protective housing preferably has a front housing part and a rear housing part which are secured together about the main frame of the printer.

Advantageously, the keyboard or keypad is alphanumeric.

In certain embodiments, the printing unit may be arranged so that it can operate in a direct, thermal print mode and in an indirect, thermal transfer mode.

Furthermore, the printing unit may be pivotally mounted so as to be movable from a second, inoperative position to a first, operative position in which the print head abuts the printing zone; and the frame may include a front plate positioned substantially perpendicular to the printing zone and having a slot located so as to be positioned at the printing zone when the printing unit is in the second, inoperative position, whereby a thermal transfer ribbon may be inserted through said slot into the printing zone.

Embodiments which utilise a printing ribbon advantageously have means for supplying the substrate to the printing unit which means comprises at least one spool or spool holder which is arranged so that, when the printer is placed on a flat, horizontal surface, the at least one spool or spool holder is oriented at an acute angle to the vertical, thereby assisting in retaining a spool containing a roll of substrate in place.

Preferably, the printer is arranged so that its components are mounted on a framework which defines the desired orientation: this orientation is advantageously in the range 5° to 25° from the vertical.

Preferably the functional components of the printer in accordance with all aspects of the invention are carried on a sheet metal frame. Preferably, this main frame also carries a pair of flanges which in turn support a spindle on which the printer handle is mounted. The central metal frame is preferably located inside inner and outer housing components which conveniently are fabricated from a plastics material. These housing parts may be screwed together through recesses in the central metal frame. Advantageously, the rear housing unit includes a horizontal ledge on both sides onto

which the lower part of the metal frame seats. A main logic board may be located beneath the metal frame and may be fixed to the frame, e.g. by three screws. Significantly, the front and rear housing parts in preferred embodiments of this invention have no support function nor any locating function so far as the functional components of the printer are concerned. The only locating function is that mentioned above, namely the provision of flanges near the bottom edge on the inside of the rear housing component onto which the main metal frame is located. The central metal frame is preferably disposed so that its main support surface is oriented at an angle of 15° the vertical.

The preferred structure described above has several advantages. Firstly, it is easy to assemble all of the functional components on the metal frame on a production line. Secondly, maintenance of the working parts of the printer is easy. Thirdly, the plastics housing is able to provide a proper protective function, since it does not support any of the functional units of the printer.

Preferably, the power supply for the printer is separated as between the logic components on the one hand, and the print head on the other; this twin supply arrangement gives more stable operating voltages.

Advantageously, the central metal frame has semi-circular cut-outs near its upper edge, through which parts of the rear housing unit pass. These parts function as receiving elements for screws which serve to join the front and rear housing units together. The screw receiving elements also help to locate the central metal frame at its upper end.

A dismountable rear door may be hingedly attached to the rear housing component to give access to the power supply section of the printer. Beneath this door, there is preferably a rectangular port which allows access for computer interfacing of the printer; and a power supply input connector for recharging the batteries. Ventilation slots are preferably provided in the top and bottom of the rear housing units. The computer interface permits the printer to be operated without any input from its own keyboard.

As mentioned above in connection with the general structure of the printer, the handle is secured to a spindle mounted in the top part of the main metal frame. The spindle may be located between a pair of forwardly projecting flanges at the top of the metal frame. The handle is conveniently mounted on the spindle by means of plastic rings. The spindle preferably also carries a spring-loaded rectangular metal flap which functions as a retaining clip for the keyboard.

In preferred embodiments, the keyboard is hinged onto the lower front part of the front housing unit. In one embodiment, a recessed, projecting

portion along the horizontal axis of the front housing unit cooperates with a correspondingly shaped recess in the bottom edge of the keyboard unit. This recess in the keyboard unit includes two inwardly projecting metal cylinders at opposite sides of the recess. One of these metal cylinders functions as the cable inlet port for the keyboard. Both metal cylinders act as locating elements when the keyboard is fitted to the front housing unit. Once this fitment is effected, a plastic locking element may be fitted over the junction. The locking element in the embodiment under consideration comprises a plastics strip having a pair of downwardly projecting lugs at opposite ends, these lugs serving to locate about the metal cylinders in the keyboard recess. The locking strip also includes a pair of longer plastic lugs locating inwardly of the first-mentioned lugs, and these longer lugs clip into the recessed section of the front housing. This arrangement provides a robust hinge which nevertheless can be easily dismantled.

Preferably, the printer is provided with a plurality of sensors which provide a number of control functions. In the presently preferred arrangement, the printer contains six sensors, but it will be understood that the printer of this invention is not limited to a construction containing any or all of these sensors, or only these sensors. The six presently preferred sensors are as follows:

(1) Paper Sensor.

This may be a fork-type in which the existence of paper serves to intercept a beam which would otherwise pass from its transmitter to a receiver (photodetector).

(2) Transfer ribbon detector.

This may be an infrared transmit/receive sensor mounted with the beam and detector side-by-side. This sensor and the paper detector are preferably mounted on a small plastic bracket which is secured to the main metal frame of the printer.

(3) Single label feed sensor.

This may be the same in construction as the transfer ribbon detector, mentioned above. It is located at the outlet end of the printer, and detects removal of a single label when the printer is in the single label mode. Removal of a label from a table at the print unit outlet is detected and the detector then actuates the printing of the next label, with its associated label feed functions.

(4) Transfer cassette detector.

This is preferably a microswitch fitted to the central metal frame in the region where a transfer ribbon cassette would be mounted; insertion of such a cassette actuates the microswitch, which then sets the printing parameters (e.g. power supply to the print head) appropriately.

Normally, lower power is required for transfer printing as opposed to direct thermal printing.

(5) Print head position detector.

A microswitch may be used to detect whether or not the print head is in its operative or inoperative position.

(6) Battery temperature thermistor.

This detects the temperature of the power supply battery during recharge. The thermistor may be mounted adjacent to the battery pack. It is used to control the recharging current during battery recharge in order to optimise the recharge operation.

A single stepping motor, advantageously one having 200 steps, is preferably used to drive the printer. The drive arrangement adopted in one embodiment of the printer is as follows:

A circular-sectioned drive band connects the output of the stepping motor to a slipping clutch drive for rewinding the backing paper from a web of labels. A toothed belt passes from the output of the stepping motor to the print roller at the output end of the print unit. A further circular sectioned drive band connects the print roller to a slipping clutch drive which serves to rewind the transfer ribbon within its cassette.

This fits into a slot in the lower right-hand side of the front housing unit.

The print head unit is preferably modular and is constructed so that it can be removed as a unit from the metal frame.

The battery or batteries, which are conveniently located in a power supply module carried by the rear face of the central metal frame of the printer, are preferably of a type which can be recharged from an outside power source, e.g. via a DIN-type socket provided at the rear of the printer. The battery charging operation is preferably under microprocessor control to give proper voltage and current; a sensor such as the thermistor mentioned earlier preferably ensures that the battery does not overheat during this operation.

Advantageously, a printer in accordance with the present invention is provided with means whereby it can operate in conjunction with a memory card or a "smart card". A slot for receiving such a card can conveniently be provided on the front of the printer.

For a better understanding of the invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:

FIGURE 1 is a schematic front elevational view showing the printing unit and some of the associated parts of a printer in accordance with this invention;

FIGURE 2 is a front elevational view of the exterior of the printer of Figure 1;

FIGURE 3 is a side elevational cut-away view corresponding to Figure 2;

FIGURE 4 is a view corresponding to that of Figure 3 but with the front cover of the printer opened;

FIGURE 5 is an exploded view showing the structural framework and the housing of the printer; and

FIGURE 6 is a side view of part of the framework shown in Figure 5.

Referring now to the drawings, the printer 1 comprises a housing 2 made up of a front housing part 2a and a rear housing part 2b (see Fig. 5). Parts 2a and 2b are held together by screws which pass through channels formed in the lower part of each housing part. The two housing parts are carried by a steel frame 2c which also serves to support all of the functional components of the printer, as will be described hereinafter. The front housing part 2a supports a face 3 of which is in the form of cover hingedly attached at 4 to the lower front section of housing part 2a. The inner face of cover 3 comprises an alphanumeric keyboard 5 which includes a plurality of keys such as 6a, 6b, 6c etc. A carrying handle 7 is provided on the top of the housing. The base 8 of the housing is adapted to stand on a flat surface.

As can be seen in Figure 3, the main components on the front of the printing unit are oriented or disposed so that the notional axis 9 of these components makes an angle of about 15° with the vertical.

As seen in Figures 1 and 4, where the cover 3 is in its opened position, thereby giving access to the keyboard 5, the printer includes a printing unit 16 including a print head 17. The print head 17 co-operates with a roller 18 to define a nip through which a substrate to be printed is passed. The zone through which the substrate passes defines a printing zone 19.

A substrate (e.g. a label carried on a roll of backing material) is wound as a spool 10 carried on a spool holder 11. Spent backing material is collected on a take-up spool 12 carried on spool holder 13. Lines 14, 14a and 15 show the path of the substrate from spool 10 to printing unit 16. Lines 20 and 20a show the path of the spent backing material from the roller 18 to take-up spool 12. A roller 21 is provided to guide the incoming substrate into the printing unit 16. A platen 22 also serves to support the incoming substrate.

A first sensor a serves to detect the presence of a substrate in the approach to printing zone 19. Sensor a is constructed as a fork, one arm of which is located on each side of the substrate path. One of the arms carries a miniature light source, and the other arm a photodetector (not shown); the output of the photodetector changes when the light

beam is intercepted by the presence of substrate.

The illustrated printer 1 is adapted to function both as a direct thermal printer, in which heated elements in the print head 17 act on a thermally sensitive substrate to generate the desired indicia; and also as an indirect, thermal transfer printer, in which the heated elements of the print head 17 serve to cause a transfer of a medium such as ink from a transfer ribbon. To this end, the printer is adapted to function with an ink transfer ribbon cassette 30. This has a supply spool 31 which co-operates with a spool holder 32 mounted on the printer; and a take-up spool 33 which co-operates with spool holder 34 mounted on the printer. Lines 35, 35a, 36 and 36a show the travel of a cassette ribbon from spool 31, through printing unit 16 and back to take-up spool 33. The cassette 30 has arms or 'claws' 37 and 38 which terminate in rollers 39 and 40, respectively, over which the ink transfer ribbon passes on entering and leaving the cassette.

An ink ribbon sensor b is provided to detect the presence of an ink ribbon in the vicinity of printing zone 19. Detector b is of the infra red reflection type, having an infra red emitter and detector side by side on a support. A microswitch d is also provided on the frame behind ribbon cassette 30 to give an indication of the presence or absence of a cassette.

Printing unit 16 is pivotally mounted to the frame 2c by pivot 42. This allows the printing unit to travel between a first, operative position (as seen in Figure 1) where the print head 17 presses the ribbon 35, 35a and the substrate 14, 14a onto the roller 18 and a second, inoperative position where the print head 17 is held away from the roller 18, which facilitates servicing and/or replacing the print head, should this be required. A microswitch sensor e gives an indication of the position of the printing unit.

Platen 22 is attached to the frame 2c by screws 41.

As can be seen best from Figure 2, the printing unit 16 includes a front plate 43 having a slot 44 which coincides with the location of printing zone 19 when the printing unit 16 is in its first operative position (as seen in Figure 1). Slot 44 enables the ready replacement of an ink transfer ribbon cassette 30 if the print head 17 is held in the second, inoperative position away from the roller 18.

The parts 11, 13, 16, 18, 21, 32 and 34 are all attached to and supported by the steel frame 2c. A drive motor 60 is also mounted on the frame 2c.

The printer also includes a display panel 50 which may comprise an LCD or a series of LEDs. The display may be divided into a plurality of separate characters such as 51a, 51b, ..., 52a, 52b, ..., etc., as seen in Figure 2.

A slot 45 is provided on the right hand side at the front of the printer (see Fig. 2); this slot serves to receive a memory card or "smart card" which may, for example, contain control data for the printer.

As shown in Figure 5, an output guide table 46 is detachably mounted at the output end of printing zone 19.

The printing regime can be selected so as to print a continuous run of, for example, labels; alternatively the printer can operate to produce individual labels one by one. For the latter, a label feed sensor c (see Figure 1) is located close to output guide table 46; sensor c detects the presence or absence of a label on the table 46 so that, when a single printed label is removed, the sensor output serves to actuate the printing of the next label.

Referring next to Figure 6, the steel frame 2c is shown, but without depicting any of the components 11, 13, 16, 18, 21, 32, 34 and 60, for reasons of clarity. The frame 2c comprises a main section 70, a base section 71 and a foot section 72. Main section 70 extends upwardly from base section 72 making an angle θ of 75° so that the section 72 is oriented at 15° to the vertical. A pair of forwardly extending flanges 80 (of which one can be seen in Figure 6) is secured to the upper part of frame section 70 and serves to receive handle 7. A rearwardly extending upper flange 73 attached to section 70 cooperates with an upwardly extending flange 74 attached to base section 71 to support a printed circuit board 90. Section 70 also carries a downwardly extending plate 75 to which a bracket 76 is bolted at 77; bracket 76 serves to retain a power supply module 91 which is seated against base section 71 of the frame 2c.

Claims

1. A portable printer (1) which comprises a housing (2); a printing unit (16) including a printing zone (19) through which (in use) a substrate (14, 14a) onto which indicia are to be printed is passed; means for supplying said substrate to said printing unit; and means for inputting data to control the nature of the indicia printed at said printing unit, wherein said housing includes a main frame (2c) which serves to support the functional components of the printer; a protective casing (2a, 2b) which fits over said frame; and a front cover (3) removably attached to the remainder of the housing, the inside face of said cover supporting or containing a keyboard or keypad (5) which constitutes or forms a component of said means for inputting data.



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2. A printer as claimed in claim 1, characterised in that said main frame (2c) is a sheet metal frame.
3. A printer as claimed in claim 1 or 2, characterised in that said protective casing comprises a front part (2a) and a rear part (2b) both of which are secured together about the main frame (2c) of the printer.
4. A printer as claimed in claim 3, characterised in that said front and rear parts (2a,2b) function as protective members without serving to support functional components of the printer.
5. A printer as claimed in claim 1, 2, 3 or 4, characterised in that said main frame (2c) comprises a substantially laminar support member (70) which is oriented at an angle of from 5 to 25 degrees from the vertical.
6. A printer as claimed in claim 5, characterised in that said laminar support member (70) is oriented at an angle of about 15 degrees to the vertical.
7. A printer as claimed in any preceding claim, characterised in that said keyboard or keypad (5) is alphanumeric.
8. A printer as claimed in any preceding claim, characterised in that said data inputting means further comprises a memory card.
9. A printer as claimed in any preceding claim, characterised in that said printing unit (16) is an ink jet printer.
10. A printer as claimed in any one of claims 1 to 8, characterized in that said printing unit (16) is a thermographic print unit.
11. A printer as claimed in any one of claims 1 to 8, characterised in that said printing unit (16) is a thermal transfer print unit.
12. A printer as claimed in any one of claims 1 to 8, characterised in that said printing unit (16) is arranged so that it can operate in a direct, thermal print mode and in an indirect, thermal transfer mode.
13. A printer as claimed in claim 11 or 12, characterized in that said printing unit (16):
 - (i) is pivotally mounted so as to be movable from a second, inoperative position to a first, operative position in which the print head (17) abuts said printing zone (19); and
 - (ii) said frame (2c) includes a front plate (43) positioned substantially perpendicular to said printing zone (19) and having a slot (44) located so as to be positioned at the printing zone (19) when the printing unit (16) is in said second, inoperative position, whereby a thermal transfer ribbon (35,35a) may be inserted through said slot into the printing zone.
14. A printer as claimed in claim 11 or 12, characterised in that said means for supplying the substrate (14,14a) to said printing unit (16) comprises at least one spool (31) or spool holder (32) which is arranged so that, when the printer (1) is placed on a flat, horizontal surface, said at least one spool or spool holder is oriented at an acute angle to the vertical, thereby assisting in retaining a spool containing a roll of substrate in place.
15. A printer as claimed in any preceding claim, characterised in that the power supply (91) for the printer is in two parts, one part providing power for the logic components (90) and the other part providing power for the print head (17).
16. A printer as claimed in any preceding claim, characterised in that a main logic board (90) is located beneath the main frame (2c) of the printer (1).
17. A printer as claimed in any preceding claim, characterised in that said keyboard (5) is hingedly attached to the lower front part of the printer housing (2).
18. A printer as claimed in any preceding claim, characterised in that the printer (1) includes a paper sensor (a) which functions to detect the presence of paper onto which indicia are to be printed.
19. A printer as claimed in any preceding claim, characterised in that the printer (1) includes a transfer ribbon detector (b) which functions to detect the presence of an ink transfer ribbon (35,35a) in the printer.
20. A printer as claimed in any preceding claim, characterised in that the printer (1) includes a label dispensing sensor (c) which functions to detect the removal of a single label from the outlet (46) of the printer and to actuate the printing of a further label in response to such removal.



21. A printer as claimed in any preceding claim, characterised in that the printer (1) includes a transfer cassette detector (d) which functions to detect the presence, in the printer, of a transfer ribbon cassette (30) and which serves to adjust the operating parameters of the printer so as to be suitable for functioning in an ink transfer mode.

22. A printer as claimed in any preceding claim, characterised in that the printer (1) includes a print head position detector (e) which functions to detect whether the print head (17) is in the operative or inoperative position.

23. A printer as claimed in any preceding claim, characterised in that the printer includes a sensor for detecting the temperature of an electrical battery forming part of the power supply system (91) for the printer.

24. A printer as claimed in any preceding claim, characterised in that the print head (17) is a modular unit which can be removed from the main frame (2c) of the printer (1) as a unit.

25. A printer as claimed in any one of claims 1 to 8 and 14, characterised in that said printing unit (16) is a multi-mode printing unit.

Patentansprüche

1. Tragbarer Drucker (1), umfassend
 - ein Gehäuse (2);
 - eine Druckeinheit (16), die einen Druckbereich (19) enthält, durch den (bei Gebrauch) ein Substrat (14, 14a) läuft, auf das Kennzeichnungen zu drucken sind;
 - eine Einrichtung, die der Druckeinheit das Substrat zuführt; und
 - eine Einrichtung zum Eingeben von Daten, die die Art der in der Druckeinheit gedruckten Kennzeichnungen steuern, wobei das Gehäuse enthält
 - einen Hauptrahmen (2c), der zum Tragen der Funktionskomponenten des Druckers dient;
 - ein Schutzgehäuse (2a, 2b), das über den Rahmen paßt; und
 - eine abnehmbar am übrigen Gehäuse befestigte Frontabdeckung (3), wobei die Innenseite der Abdeckung eine Tastatur oder ein Tastenfeld (5) trägt oder enthält, die bzw. das eine Komponente der Dateneingabeeinrichtung bildet oder ausmacht.
2. Drucker nach Anspruch 1, dadurch gekennzeichnet, daß der Hauptrahmen (2c) ein Stahlblechrahmen ist.

3. Drucker nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß das Schutzgehäuse ein Vorderteil (2a) und ein hinteres Teil (2b) umfaßt, die beide zusammen und den Hauptrahmen (2c) des Druckers befestigt sind.

4. Drucker nach Anspruch 3, dadurch gekennzeichnet, daß das Vorderteil und das hintere Teil (2a, 2b) als schützende Teile wirken und nicht dazu zu dienen, Funktionskomponenten des Druckers zu halten.

5. Drucker nach Anspruch 1, 2, 3 oder 4, dadurch gekennzeichnet, daß der Hauptrahmen (2c) ein im wesentlichen plattenförmiges Halteteil (70) umfaßt, das einen Winkel von 5 bis 25 Grad gegen die Senkrechte einnimmt.

6. Drucker nach Anspruch 5, dadurch gekennzeichnet, daß das plattenförmige Halteteil (70) einen Winkel von etwa 15 Grad gegen die Senkrechte einnimmt.

7. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß die Tastatur oder das Tastenfeld (5) alphanumerisch ist.

8. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß die Dateneingabeeinrichtung zudem eine Speicherkarte umfaßt.

9. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß die Druckeinheit (16) ein Tintenstrahldrucker ist.

10. Drucker nach irgendeinem der Ansprüche 1 bis 8, dadurch gekennzeichnet, daß die Druckeinheit (16) eine thermographische Druckeinheit ist.

11. Drucker nach irgendeinem der Ansprüche 1 bis 8, dadurch gekennzeichnet, daß die Druckeinheit (16) eine Thermotransfer-Druckeinheit ist.

12. Drucker nach irgendeinem der Ansprüche 1 bis 8, dadurch gekennzeichnet, daß die Druckeinheit (16) so eingerichtet ist, daß sie in einem direkten Modus, dem Thermodruckmodus, und in einem indirekten Modus, dem Thermotransfermodus, arbeiten kann.

13. Drucker nach Anspruch 11 oder 12, dadurch gekennzeichnet, daß die Druckeinheit (16)

- (i) drehbar montiert ist, so daß sie aus einer zweiten Stellung, der Ruhestellung, in eine



- erste Stellung, die Betriebsstellung, bewegt werden kann, in der der Druckkopf (17) an den Druckbereich (19) anstößt; und
- (ii) der Rahmen (2c) eine Frontplatte (43) enthält, die im wesentlichen rechtwinklig zum Druckbereich (19) angeordnet ist und einen Schlitz (44) aufweist, der so angeordnet ist, daß er an den Druckbereich (19) gelangt, wenn die Druckeinheit (16) in der zweiten Stellung, der Ruhestellung ist, wobei ein Thermotransferband (35, 35a) durch den Schlitz in den Druckbereich eingesetzt sein kann.
14. Drucker nach Anspruch 11 oder 12, dadurch gekennzeichnet, daß die Einrichtung zum Einspeisen des Substrats (14, 14a) in die Druckeinheit (16) mindestens eine Spule (31) oder einen Spulenhalter (32) umfaßt, der so eingerichtet ist, daß die mindestens eine Spule bzw. der eine Spulenhalter unter spitzem Winkel gegen die Senkrechte gerichtet ist, falls der Drucker (1) auf eine ebene, waagrechte Fläche gestellt wird, wobei die Spule bzw. der Halter das Festhalten einer Spule, die eine Substratrolle enthält, an ihrem Platz unterstützt.
15. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß die Energieversorgung (91) des Druckers aus zwei Teilen besteht, wobei ein Teil die Energie für die Logikkomponenten (90) und der andere Teil die Energie für den Druckkopf (17) bereitstellt.
16. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß eine Hauptlogikkarte (90) unter dem Hauptrahmen (2c) des Druckers (1) angeordnet ist.
17. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß die Tastatur (5) schwenkbar am unteren Vorderteil des Druckergehäuses (2) befestigt ist.
18. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß der Drucker (1) einen Papiersensor (a) enthält, der dazu dient, vorhandenes Papier zu erkennen, auf das die Kennzeichnungen zu drucken sind.
19. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß der Drucker (1) einen Transferbandfühler (b) enthält, der dazu dient, ein im Drucker vorhandenes Tintentransferband (35, 35a) zu erkennen.
20. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß der Drucker (1) einen Etikettenausgabesensor (c) enthält, der dazu dient, das Entfernen eines einzelnen Etiketts vom Auslaß (46) des Druckers zu erkennen und das Drucken eines weiteren Etiketts als Reaktion auf das Entfernen des Etiketts anzustoßen.
21. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß der Drucker (1) einen Transferkassettenfühler (d) enthält, der dazu dient, eine im Drucker vorhandene Transferbandkassette (30) zu erkennen, und dazu, die Betriebsparameter des Druckers einzustellen, so daß sie zum Betrieb in einem Tintentransfermodus passen.
22. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß der Drucker (1) einen Druckkopf-Stellungsfühler (e) enthält, der dazu dient, festzustellen, ob der Druckkopf (17) in Betriebsstellung oder in Ruhestellung ist.
23. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß der Drucker einen Sensor zum Erkennen der Temperatur einer elektrischen Batterie enthält, die einen Teil des Energieversorgungssystems (91) des Druckers bildet.
24. Drucker nach irgendeinem vorhergehenden Anspruch, dadurch gekennzeichnet, daß der Druckkopf (17) eine modulare Einheit ist, die vom Hauptrahmen (2c) des Druckers (1) als Einheit entfernt werden kann.
25. Drucker nach irgendeinem der Ansprüche 8 bis 14, dadurch gekennzeichnet, daß die Druckeinheit (16) eine Multimode-Druckeinheit ist.

Revendications

1. Imprimante portative (1) qui comprend un logement (2) ; une unité d'impression (16) comprenant une zone d'impression (19) par laquelle est transmis (à l'utilisation) un substrat (14, 14a) sur lequel des caractères doivent être imprimés ; un moyen pour faire avancer ledit substrat vers ladite unité d'impression ; et un moyen pour entrer des données de commande de la nature des caractères imprimés par ladite unité d'impression, imprimante dans laquelle ledit logement comprend un châssis principal (2c) qui sert à supporter les composants fonctionnels de l'imprimante ; un boîtier protecteur



- (2a, 2b) qui se place sur ledit châssis ; et un couvercle antérieur (3) fixé de manière amovible au reste du logement, la surface intérieure dudit couvercle supportant ou contenant un clavier ou une table à touches (5) qui constitue ou forme un composant dudit moyen pour entrer des données.
2. Imprimante selon la revendication 1, caractérisée en ce que ledit châssis principal (2c) est un châssis constitué d'un feillard métallique.
 3. Imprimante selon la revendication 1 ou 2, caractérisée en ce que ledit boîtier protecteur comprend une partie antérieure (2a) et une partie arrière (2b), toutes deux étant fixées ensemble autour du châssis principal (2c) de l'imprimante.
 4. Imprimante selon la revendication 3, caractérisée en ce que lesdites parties antérieure et arrière (2a, 2b) ont pour fonction de constituer des éléments protecteurs sans servir à supporter les composants fonctionnels de l'imprimante.
 5. Imprimante selon la revendication 1, 2, 3 ou 4, caractérisée en ce que ledit châssis principal (2c) comprend un élément de support sensiblement laminaire (70) qui est orienté suivant un angle de 5 à 25 degrés par rapport à la verticale.
 6. Imprimante selon la revendication 5, caractérisée en ce que ledit élément de support laminaire (70) est orienté suivant un angle d'environ 15 degrés par rapport à la verticale.
 7. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que ledit clavier ou ladite table à touches (5) est alphanumérique.
 8. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que ledit moyen d'entrée de données comprend par ailleurs une carte à mémoire.
 9. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que ladite unité d'impression (16) est une imprimante à jet d'encre.
 10. Imprimante selon l'une quelconque des revendications 1 à 8, caractérisée en ce que ladite unité d'impression (16) est une unité d'impression par thermographie.
 11. Imprimante selon l'une quelconque des revendications 1 à 8, caractérisée en ce que ladite unité d'impression (16) est une unité d'impression par transfert thermique.
 12. Imprimante selon l'une quelconque des revendications 1 à 8, caractérisée en ce que ladite unité d'impression (16) est disposé de manière qu'elle puisse fonctionner en mode d'impression thermique direct et en mode de transfert thermique indirect.
 13. Imprimante selon la revendication 11 ou 12, caractérisée en ce que ladite unité d'impression (16) :
 - (i) est montée pivotante de manière à être déplaçable d'une seconde position inactive à une première position active dans laquelle la tête d'impression (17) est en butée contre ladite zone d'impression (19) ; et
 - (ii) ledit châssis (2c) comprend une plaque antérieure (43) placée sensiblement perpendiculairement à ladite zone d'impression (19) et comportant une fente (44) placée de manière à être positionnée sur la zone d'impression (19) lorsque l'unité d'impression (16) est à ladite seconde position inactive, de manière qu'un ruban de transfert thermique (35, 35a) puisse être introduit par ladite fente dans la zone d'impression.
 14. Imprimante selon la revendication 11 ou 12, caractérisée en ce que ledit moyen pour faire avancer le substrat (14, 14a) vers ladite unité d'impression (16) comprend au moins une bobine (31) ou un support de bobine (32) qui est disposé de manière que, lorsque l'imprimante (1) est placée sur une surface plane horizontale, ladite au moins une bobine ou ledit au moins un support de bobine soit orienté suivant un angle aigu par rapport à la verticale de manière à contribuer à maintenir en place une bobine contenant un rouleau de substrat.
 15. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que l'alimentation en énergie (91) de l'imprimante est en deux parties, une partie fournissant l'énergie aux composants logiques (90) et l'autre partie fournissant l'énergie à la tête d'impression (17).
 16. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce qu'un panneau logique principal (90) est placé sous le châssis principal (2c) de l'imprimante (1).



17. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que ledit clavier (5) est monté par articulation sur la partie antérieure inférieure du logement (2) de l'imprimante.

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18. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que l'imprimante (1) comprend un détecteur de papier (a) qui a pour fonction de détecter la présence de papier sur lequel des caractères doivent être imprimés.

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19. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que l'imprimante (1) comprend un détecteur (b) de ruban de transfert qui a pour fonction de détecter la présence d'un ruban de transfert d'encre (35, 35a) dans l'imprimante.

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20. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que l'imprimante (1) comprend un détecteur de distribution d'étiquettes (c) qui a pour fonction de détecter l'enlèvement d'une unique étiquette à la sortie (48) de l'imprimante et de déclencher l'impression d'une autre étiquette en réponse à cet enlèvement.

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21. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que l'imprimante (1) comprend un détecteur de cassette de transfert (d) qui a pour fonction de détecter la présence dans l'imprimante d'une cassette de ruban de transfert (30) et qui sert à régler les paramètres de fonctionnement de l'imprimante de manière qu'elle convienne pour fonctionner en mode de transfert d'encre.

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22. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que l'imprimante (1) comprend un détecteur (e) de la position de la tête d'impression qui a pour fonction de détecter si la tête d'impression (17) est en position active ou inactive.

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23. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que l'imprimante comprend un détecteur destiné à détecter la température d'une batterie électrique qui fait partie du système d'alimentation en énergie (91) de l'imprimante.

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24. Imprimante selon l'une quelconque des revendications précédentes, caractérisée en ce que la tête d'impression (17) est un groupe modulaire qui peut être enlevé du châssis principal (2c) de l'imprimante (1) sous forme d'un mo-

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dule.

25. Imprimante selon l'une quelconque des revendications 1 à 8 et 14, caractérisée en ce que ladite unité d'impression (16) est un groupe d'impression à modes multiples.