April 23, 1968 C. R. KORFMANN 3,379,130

PRINTING DEVICE

Filed July 25, 1966

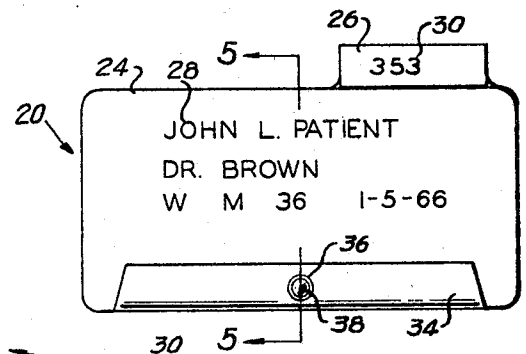


Fig. 1

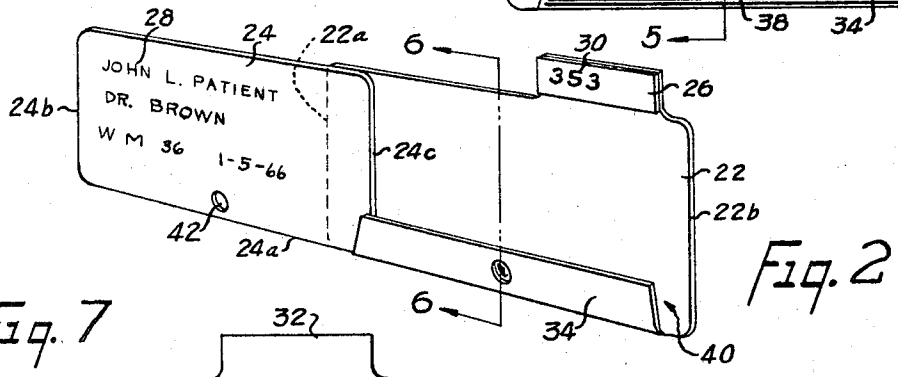
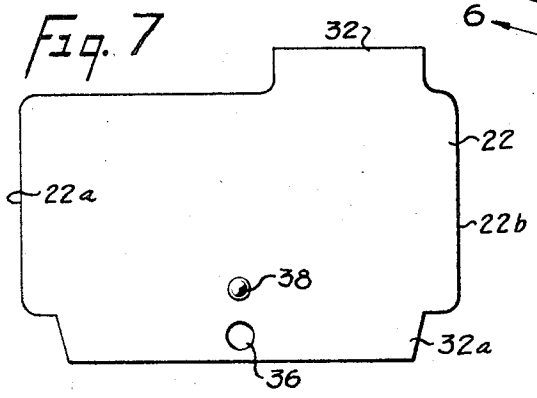


Fig. 2

Fig. 7



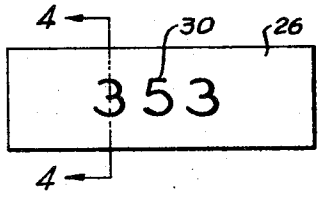


Fig. 3

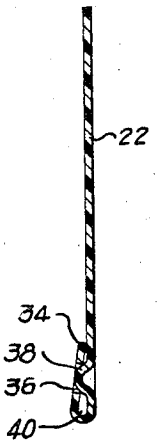


Fig. 6

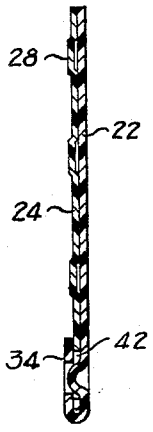


Fig. 5

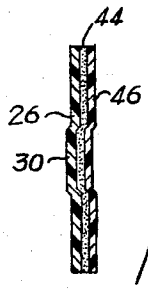


Fig. 4

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PRINTING DEVICE

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ABSTRACT OF THE DISCLOSURE

A printing device with a replaceable portion which device is made of plastic sheet and comprises a carrier and two embossed printing plates which are carried by the carrier. One of the margins of the carrier is turned over to form a spring tongue, and the tongue contains an opening which is in alignment with a projection struck up from the body of the carrier. One of the printing plates, bearing data of a relatively temporary nature, has an opening near one of its longer margins which, when placed in alignment with the prejection and opening in the carrier, serves to removably retain the plate on the carrier.

The carrier also contains a tab portion extending from the margin opposite to the spring tongue. The second printing plate, which bears relatively permanent data, is secured to the tab portion so as to present its printing surface coplanar with the printing surface of the first printing plate. The second plate is so positioned on the tab portion of the carrier that it abuts the first plate to inhibit inadvertent dislodgment of the first plate from the carrier.

Background and objects of the invention

This invention relates to printing devices and, more specifically, to printing devices which are particularly well adapted for use in hopsitals and the like, for making records which include permanent or fixed data, and temporary or variable data.

In various fields of business it is necessary to prepare records which include data that are repetitive in nature in that they are pertinent to, and are used in the preparation of, various records. Certain parts of such data are commonly permanent in nature, that is, they are repeated in the preparation of various records even though other parts of the data may be changed. The other parts of the data may be temporary in nature, that is, although they may be repeated on several records, they eventually become obsolete and are replaced by other temporary data which are desired to be recorded with the same permanent data previously recorded with the first mentioned temporary data.

It is a primary object of this invention to provide a novel printing device which is constituted and arranged in a novel manner and which may be used for directly printing such data, both permanent and temporary.

Another object of this invention is to afford a novel printing device which is a visually readable record of such aforementioned permanent and temporary data, and also affording a practical device from which said data may be directly printed in making up other records requiring the data.

A further object of this invention is to afford a novel printing device of the aforementioned type on which the temporary data are mounted and retained in a novel manner in proper position relative to the pertinent permanent data, and which temporary data may be quickly removed and replaced with other temporary data in a novel and expeditious manner.

In hospitals and the like, especially, it is highly desirable that disturbing noises be eliminated. If printing devices made from metal and the like were used to carry data

relative to a patient, and such devices were accidentally dropped, such as when they were being disposed of, such devices would make an undesirable noise. It is a further object of this invention to eliminate such undesirable noise.

In hospitals and the like, certain of the data relative to a patient, which it is necessary to keep while the patient is in the hospital, are temporary in nature, that is, they pertain only to that patient, not to any other. Such transitory information usually includes the patient's name, identity of his doctor, sex, age, date of admittance, and the like, and whatever other data is desired, such as blood type or religion.

Certain other information, such as the room number, is permanent in nature and has relation to a patient only while the patient is in the hospital.

Another object of this invention is to afford a novel printing device including a combination of printing plates arranged in a novel manner on a carrier, or frame.

Another object of this invention is to afford a printing device including a printing plate which is releasably retained on a carrier in a novel manner.

Another object of this invention is to enable a carrier, constructed of relatively thin flat plastic sheet material, and a combination of printing plates constructed of like material, to be arranged in a novel manner to afford a thin printing device which may be used to imprint data on records and the like from both printing plates simultaneously.

Other and further objects, features and advantages of the present invention will be apparent as the description proceeds.

Brief description of the drawings

In the drawings:

FIG. 1 is a face view of the printing side of a printing device embodying the principles of the present invention;

FIG. 2 is a perspective of the printing device of FIG. 1, showing one printing plate partially removed from the printing device;

FIG. 3 is a face view of a second printing plate utilized in the priting device shown in FIGS. 1 and 2;

FIG. 4 is an enlarged detail section taken substantially on line 4—4 of FIG. 3, showing the second printing plate after it is embossed but prior to removal of its protective backing strip;

FIG. 5 is an enlarged section taken substantially on line 5—5 of FIG. 1;

FIG. 6 is an enlarged section taken substantially on line 6—6 of FIG. 2, and

FIG. 7 is a face view showing the carrier of the printing device as it appears after being struck from a sheet or coil of material, and before forming.

Description of the preferred embodiment

The printing device of the invention will now be described in detail. Throughout the description, reference will be made to the use of the device as applied to hospital patient procedures. However, such reference is merely to set forth a typical commercial application of the device and it will be understood that the device may be utilized by industry, banks, retail outlets and the like, wherever there is a requirement for the simultaneous printing or recording of permanent and variable data.

The printing device of the invention is depicted generally by the numeral **20**, and comprises a substantially rectangular, resilient frame or carrier **22**, which is adapted to carry a first printing plate **24** and a second printing plate **26**. The first plate **24** has embossed or relief characters **28** formed therein, which serve to identify the patient in a hopsital, for example, and in such an instance would also bear information relating to identity of his doctor, sex, age, data of admittance, and the like. Ob-

viously, any other desired data such as religion or blood type could also be embossed in the plate **24**.

The second printing plate **26** also contains relief or embossed characters **30**. In the embodiment shown in the drawings, the embossed characters **30** would be intended to specify the patient's room number.

With reference to FIG. 7, the carrier **22** may be struck or punched from a flat sheet or coil of resilient material to provide a blank which includes a tab portion **32** and a margin **32***a*. At the time the carrier blank is formed, additional formations may be advantageously made, such as the opening **36** and the embossed projection **38**, the purpose of which will be explained more fully hereinafter. However, if desired, forming of the opening **36** and projection **38** can be achieved in one or more separate operations. At any rate, opening **36** and projection **38** should be in substantially vertical alignment as viewed in FIG. 7, the purpose for which will become apparent hereinafter. Moreover, it has been found that a preferred location for the opening and the projection is substantially midway between the sides **22***a* and **22***b* of the carrier **22**.

After the carrier blank has been formed so as to assume the configuration shown in FIG. 7, the lower margin **32***a* of the carrier **22** is folded or turned over upon the body of the carrier to provide a channel **40**. The margin **32***a* can be folded in any well known manner, but is actually permanently formed in this position so that the fold acts as a spring tongue **34**, urging the edge of the margin **32***a* towards the body of the carrier. However, it is important that the perforation **36** and projection **38** be so placed that the perforation will be substantially in alignment with and receive the projection **38** after folding, as shown in FIG. 6. Another important feature in connection with the forming of the channel **40** is that it has been found to be highly desirable to execute the folding of the margin **32***a* in a predetermined manner such that the extreme edge portion of the margin is forced back until it is substantially in contact with the body of the carrier **22**, while the fold itself exhibits a substantial radius. The advantage of this feature will become apparent as the description of the invention continues.

It should be noted at this point that the first printing plate **24** contains a perforation **42** located adjacent the lower edge **24***a* thereof and approximately longitudinally midway between the sides **24***b* and **24***c* thereof.

Referring now to FIGS. 3 and 4, the second printing plate **26** has on its surface opposite the surface which will bear the embossed characters **30**, a layer of adhesive **44**, preferably pressure sensitive, covered by a protective backing strip **46**. After the characters **30** have been formed or embossed, the protective strip **46** can be removed and the plate **26** fixedly mounted on the tab portion **32** of the carrier **22** in a predetermined position, as shown in FIGS. 1 and 2.

At this point, the printing device **20** is ready for completion of its assembly, and this may be easily and readily accomplished by sliding the first printing plate **24** along the channel **40** in carrier **22**, at the same time utilizing the bottom edge of the second plate **26** as a guiding means, or the plate **24** may be placed on the body of the carrier **22** against the upper edge of the spring tongue **34** and then forced toward the channel **40**, the body of the carrier **22** being slightly flexed to provide a point of entry for a corner of the plate **24** between the carrier body and the edge of the spring tongue. In any event, the resilience of the carrier **22** (and its spring tongue **34**) enables the plate to be quickly and easily seated in the channel **40**. Whatever method of asembly is preferred, the plate **24** is moved on the carrier until it snaps into its final position, i.e., when the perforation **42** in plate **24** is in alignment and interlocking engagement with projection **38** of carrier **22** where it is held by the pressure of spring tongue **34**. In such final position, it will readily be seen that the plate **24** is securely retained in place on the carrier **22** with its bottom edge adjacent the channel bottom so that the plate is steadied in alignment with the carrier. It will be noted that the radius of the bend provided in forming the spring tongue **34** is sufficient to provide a clearance from the body of the carrier which will receive the thickness of the plate **24** and allow it to seat down against the bottom of channel **40**, so as to achieve a guiding or steadying relationship therewith. This will assist in preventing the rocking of the plate on the carrier even though it is actually retained at a single central point only.

As an added locking feature, however, the printing device has been designed so that when the plate **24** has been positioned on the carrier **22** as described immediately hereinabove, the top edge of plate **24** abuts against the lower edge of plate **26**, as shown in FIG. 1. This feature thus provides added assurance against inadvertent dislodgment or removal of the plate **24** from the carrier **22**. It will be understood, of course, that in certain situations a similar ledge means parallel to the channel **40** can be provided on the carrier by means other than the attachment of a second printing plate to assist in the retention of the removable plate if desired.

As viewed in FIGS. 1 and 2, for convenience the vertical margins or edges of carrier **22**, designated by the numerals **22***a* and **22***b*, and the vertical margins or edges of plate **24**, designated by the numerals **24***b* and **24***c*, may be termed Y edges or margins. Similarly, both the upper and lower horizontal margins of carrier **22** and plate **24** which extend parallel to the lines of embossed characters, as viewed in FIGS. 1 and 2, may be termed X edges or margins.

After final assembly, the printing device **20** asumes the completed appearance and combination shown in FIG. 1, and may be inserted in any conventional imprinting machine for the preparation of desired forms and records. In connection with the imprinting operation, it should be pointed out that to insure legible and complete imprints, it is important that the tops of the embossed characters **28** and **30** be in substantially the same plane. Bearing in mind that the carrier is of uniform thickness throughout and that the plate **26** is held in place with an adhesive while plate **24** is not, it is important that the thickness of the various elements be adjusted so that the combined thicknesses of he carrier **22** and plate **24** will be approximately the same as the combined thicknesses of the carrier **22**, the plate **26**, and the adhesive coating **44**. By way of example, and without suggesting limitative dimensions, if the plate **24** is in the neighborhood of .018" thick, the plate **26** can be .015" thick and the thickness of the adhesive coating is controlled to a thickness of .003". Since the carrier **22** is of uniform thickness throughout, the surfaces of the plates **24** and **26** will thus be in the same plane. It logically follows that the printing surfaces of the embossed characters **28** and **30** will also be in the same plane when both plates are embossed with characters of the same height above the plate surface.

As explained hereinabove, the second printing plate is intended to bear data of a permanent nature. Thus, there would be no particular reason for its removal from the carrier **22**. In the case of hospitals, it may be assumed that there is at least one carrier with a permanently attached plate such as plate **26** for each room in the hospital. However, since the first printing plate bears data which are personal to the patient, it is temporary and ordinarily useful only from the time the patient is admitted until he leaves. Therefore, the plate **24** must be removable so that a new plate may be inserted into the carrier. The resiliency of the plastic material from which the carrier **22** is made provides both for retention of the plate **24** and for ready removal of the plate from the carrier. For example, the carrier may be flexed so as to free the top edge of the plate **24** from its abutting relation with the lower edge of plate **26**, whereupon the plate **24** may be moved upwardly out of the channel **40**. Or, the plate may be slid along channel **40**, as shown in FIG. 2. Whichever method

of removal is preferred, the flexibility of the material permits ready intentional disabling of the retention arrangement previously created by projection **38** and the openings **36** and **42**, without damage to, or permanent distortion of, the material.

While preferred embodiments of the invention have been described and illustrated, it is to be understood that these are capable of variation and modification. Accordingly, the aim in the appended claims is to cover all such variations and modifications as may fall within the true spirit of the invention.

What is claimed is:

1. A printing device comprising:

(a) a generally rectangular thermoplastic carrier having substantially parallel pairs of X and Y edges respectively perpendicular to each other, and having one of its X edge margins turned over and permanently deformed to form a spring tongue, the tongue having an opening therein substantially midway between the Y edges of the carrier, the carrier having at least as a portion of its other X edge margin a tab portion;

(b) a projection struck up from the carrier body substantially in alignment with the opening in the tongue and normally extending into said opening;

(c) a generally rectangular thermoplastic printing plate somewhat narrower than the maximum dimension of said carrier in the Y direction having parallel pairs of X and Y edges respectively perpendicular to each other and corresponding to the X and Y edges of said carrier, said plate having thereon a line of embossed type characters defining a printing area, with the line extending parallel to the X edges of the plate, said plate being removably mounted on the carrier and having an opening therein inwardly of one of its X edges and substantially midway between its Y edges, said opening being outside of the printing area of the plate and adapted to be aligned with both the tongue opening and the projection in the carrier, whereby the plate is located and retained on the carrier by the spring tongue urging the plate to a position such that its opening is penetrated by the projection with the spring tongue parallel to and outside the printing path defined by the extent of the lines of embossed characters in the Y direction; and

(d) a second thermoplastic printing plate having thereon embossed type characters defining a second printing area having a common printing surface with the first plate, said second plate being secured to the tab portion of the carrier in a predetermined position such that one of the edges of the second plate abuts a portion of the other X edge of the first plate to thereby inhibit inadvertent dislodgment of said first plate from the spring tongue in a direction parallel to the Y edges.

2. A printing device as set forth in claim **1** in which the second printing plate comprises a plastic sheet thinner than the first-mentioned printing plate, embossed to a height above its surface equal to the embossed height of the characters on the first-mentioned plate, and attached to the carrier by self-carried adhesive layer of a thickness substantially equal to the difference in thickness between said second printing plate and said first-mentioned printing plate.

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