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(12) # EUROPEAN PATENT APPLICATION

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(54) **Improvements in business forms assemblies.**

(57) This invention is concerned with business forms assemblies (1) sometimes known as freight forms and which includes a file copy sheet and an envelope assembly in which the envelope assembly has a first outer transparent sheet (6) of protective film material and a second outer sheet (10) having an adhesive coating on its outer face and with a barrier coating thereon with an intermediate copy sheet or sheets between the outer transparent sheet and the outer adhesive coating sheet in which the transparent sheet is of tack material (preferably tack polyethylene) and the second outer sheet is of material to which the tack material adheres by the application of pressure.

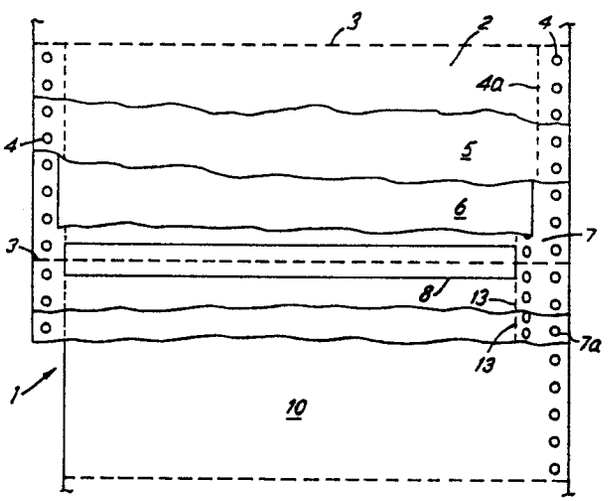

Fig. 2

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IMPROVEMENTS IN BUSINESS FORMS ASSEMBLIES

This invention has reference to business forms assemblies and has particular reference to those assemblies referred to in the United Kingdom as Freight Forms although in other countries of the world these are referred to by the names for example bus bills and shipping order forms.

In United States Patent Specification No. 4153163 there is described a combination envelope and form assembly for use as a shipping envelope. The front of the envelope is made of transparent material. The assembly also includes a plurality of intermediate record sheets with complementary carbon sheets or chemical coated paper to record data relating to the shipping transaction. Data is applied to the assembly and the carbon sheets are subsequently detached, and selected record sheets are also attached for record purposes. The assembly is then applied to a parcel by the adhesive backing at the rear of the envelope and despatched. On arrival the remaining record sheets are detached for record purposes.

In Canadian Patent Specification No. 1116137 there is described a shipping form including an envelope of heat sealable plastics material such adhesive being applied to the rear panel for adhering the envelope to a package and with a first set of form sheets within the envelope, and a second set of form sheets superposed on the envelope and aligned with the first set of form sheets for data recording and which form sheets may be selectively removed for data etc. recording purposes. Carbon sheets are associated with the record sheets for data recording purposes.

The shipping form assemblies as described in these prior specifications are primarily intended to be used for individual insertion into a typewriter.

It is desired to provide a business forms assembly preferably of continuous stationery for use as freight forms or shipping forms or the like which are capable of being processed in a print unit for example associated with a computer. Accordingly the business forms assembly should have a thickness not in excess of 21 thousandths of an inch - (say 0.053 cms.) and have outer properties such as flexibility so that it may pass through the print unit. It is therefore an object of the present invention to provide an improved business forms assembly such that it may pass through the print unit.

It is a further object of the present invention to provide an improved business forms assembly such that it may be used as a freight form (or as a shipping order form). It is a further object of the present invention to provide an improved business forms assembly such that the assembly is in continuous form and may be used with a print unit of a computer or the like in order that data may be applied satisfactorily to the assembly.

It is a further object of the present invention to provide an improved business forms assembly in which the web or sheet parts of the assembly may be secured together effectively.

According to the present invention a business forms assembly comprises a file copy sheet and an envelope assembly the said envelope assembly comprising a first outer transparent sheet of protective film material and a second outer sheet having an adhesive coating on its outer face and with a barrier coating thereon with an intermediate copy sheet or sheets between the outer transparent sheet and the outer adhesive coating sheet characterised in that the transparent sheet is of tack material and the second outer sheet is of material to which the tack material adheres by the application of pressure.

Conveniently the business forms assembly is composed of continuous webs.

Business forms assemblies in accordance with the present invention will now be described by way of example with reference to the accompanying drawings wherein.

Fig. 1 is a side view of the business forms assembly taken on the line 1 -1 Fig. 2

Fig. 2. is a plan view of the business forms assembly

Fig. 3 is a perspective view of the envelope assembly of the business forms assembly, and

Fig. 4 is an exploded view of the envelope assembly.

Referring to Figs. 1 and 2 of the drawings there is shown a business forms assembly 1 comprising a plurality of interleaved continuous webs and intended primarily for freight forms.

The uppermost web 2 is a record copy sheet of light weight paper and of a minimum thickness and typically of a width of 10 inches (say 25 cms). The web is printed with data relevant to the application to which the assembly is used. Thus it may include areas to receive the name and address of the person to whom the freight is to be delivered and areas to receive details of the freight being transported as well as areas to receive details as to the purchase price of the freight. The underlying and interleaved webs 5,6,7,7a, 10 of the assembly are in register with web 2 and bear corresponding areas to receive data as may be required. Each of the webs is divided by transverse lines of perforations 3 into freight form lengths and has marginal feed apertures 4 to enable the as-

sembly to be fed through an imprinting machine, for example the print unit of a computer. The web 5 has the same width as the web 2 and is superimposed beneath the uppermost web 2 and is a further record copy web and is a self contained imaging web. The web is printed with data areas in register with corresponding data areas on the uppermost web 2 and has transverse lines of cross perforations 3 likewise in register with the transverse lines of perforations 3 in the web 2 and marginal feed apertures. The further record copy web 5 has a coating on its upper face of a self contained imaging layer. This self contained imaging coating layer includes both a colour former and a material capable of reacting with the colour former to produce a mark where pressure is applied to the paper web as by ball point pen or the type face of a print unit as of a computer. The record copy web is preferably of the kind PTO (press type O) or PTA (press type A) manufactured under the Trade Mark Croxley. If desired additional record copy webs are provided of a minimum thickness and with a self imaging coating as may be desired by the application to which the assembly is to be used, but provided that the total thickness of the assembly does not exceed 21 thousandths of an inch (0.053 cms).

The marginal feed apertures 4 are provided in a marginal strip which may be detached by tearing along the longitudinal lines of perforations 4a in the respective webs.

A web 6 of transparent film material is positioned underneath the further record copy web (or webs) 5 but has a width slightly less that the width of the webs 2 and 5. Thus the side edges of the web 6 do not overlap the marginal feed apertures of the webs 2 and 5. The web 6 does not have marginal feed apertures but has lines of cross perforations 3 in register with the transverse perforations 3 in the webs 2 and 5 for dividing the web into envelope lengths (or form lengths). The web 6 is conveniently made of polyethylene film 15 microns thick and of 14 grams weight (per square metre). The transparent material is required to be thin and give adequate flexibility in feeding the assembly and for processing the assembly (as to be hereinafter described). Another additional web 7 is positioned beneath the web 6 of transparent material, This web 7 is of the same width as the webs 2 and 5, is a further record copy web and is of a similar self contained imaging coated material as the webs 2 and 5 and is printed with data areas similar to the webs 2 and 5 with the data areas of the respective webs in register with one another. The web 7 also has transverse lines of cross perforations 3 in register with the lines of cross perforations 3 in the webs 2, 5 and 6. A series of areas 8 of the web 7 is die cut to provide a window opening. These areas 8 extend for a distance of about 5/16 of an inch across the web 7 on opposite sides of each of the transverse perforation lines for a distance of about 8¼ inches (say 21 cms). These areas 8 are for the purpose of securing the front face of the rear web 10 (to be hereinafter described) to the rear face of the transparent web 6. The transparent web 6 is secured to the adhesive coating web 10 by virtue of the properties of the web rather than by adhesive. Thus the transparent web 6 shown in Fig. 5 is of tack polyethylene which is supplied by MACTAC Limited of Northampton. This tack polyethylene has the property when applied to a surface by pressure of adhering to such surface.

Accordingly the tack polyethylene has the capability of securing itself to the adhesive coating web 10 through the die cut area 8. Because the material is tack material it adheres to the front face of the rear web but does not adhere to the self contained imaging web 7 and the sheet 7 when detached may be removed from between the transparent sheet 26 and the adhesive coating sheet 30 by tearing across the perforation line 13.

Data may be extracted from the record copy sheet by reading through the transparent sheet.

It is found that the tack transparent material adheres best to the rear web constituted by an adhesive coating sheet 10 if the adhesive coating sheet has a base sheet of polyethylene on which the adhesive coating is applied. Such a base sheet has a weight of 160 grams. Such an adhesive coating is obtainable from MACTAC of Northampton.

As shown in Fig. 2 (but for the sake of clarity not in Fig. 1) an additional record copy web 7a is produced beneath the web 7. This web 7a is coated with a coating of self contained imaging material and is printed with the same data areas as the web 7. It also has the feed apertures 4 and cross perforations 3. The provision of this web is optional depending upon the required number of record copy sheets. The lowermost web 10 of the assembly comprises a sheet of lightweight paper of about 125 grams per square metre or light weight plastics material such as coated polypropylene with adhesive on its rear face and which adhesive coating is covered by a silicon based barrier coating web say of 60 grams per square metre. The web 10 extends on one side (the right hand side as shown in Fig. 2) in register with the webs 2, 5 and 7 of the assembly and has marginal feed apertures adjacent this side edge.

In Fig. 1 of the drawings there is shown a single record copy web 7 between the transparent web 6 and the web 10. However if for the system the present business form assembly as provided requires more than one copy at the place of deliv-

ery more than one such second copy web may be included. Such a web has a self contained imaging coating layer and has a blocked out area 8 in register with the die cut area in the web 7 and has longitudinal lines of spots of adhesive 11.

It is normally required to have the record copy sheet the record copy web 7 detached from the envelope formed by the transparent web 6 and the adhesive web 10 and for this purpose a line of longitudinal tear off perforations 13 is formed in the record copy web just within the line of spots of adhesive 11 between the transparent web 6 and the record copy web 7.

As shown in Fig. 3 the marginal strip containing the feed apertures 4 (as shown in Figs. 1 and 2 on the left hand side) has been removed the underlying record copy webs 7 and 7a are shown partly detached from the envelope formed from the sheets 6 and adhesive sheet 10. It will be apparent that data typed or written on the sheet 2 and with copies made on the underlying record copy sheets 7 will be visible through the transparent sheet 6 even when one or more of the record sheets is detached from the form length by tearing along the longitudinal perforation line as may be required. Such a remaining sheet is not shown in Fig. 3. Referring to Fig. 4 of the drawings there is shown in exploded view the various parts which together form a single form length.The parts do not correspond to the sheets as As shown in Fig. 3 which also shows a form length of the business forms assembly. As shown the first or uppermost sheet is part of the web 2 and constitutes a first record sheet 22. If required further record sheets may be included. The second sheet 26 is part of the transparent material web 6 and is not as wide as the record sheet 22. The third sheet 27 is part of the continuous record web 7 and receives data as applied to the first record sheet 22. The last sheet 30 is part of the lowermost adhesive coating web 10 and has marginal feed apertures along one side only and the sheet is not as wide as the record copy sheet 22 and 27.

A business forms assembly as shown in the drawings is primarily intended for use in connection with the despatch of freight for example from a despatch department to a customer. An assembly as shown in Figs. 1 and 2 is processed through for example a computer and data is applied to the uppermost web 2 of the assembly by the print unit of the computer and reproduced on the underlying record copy webs 5, 7 and 7a being the self contained imaging coating web.

Subsequently the uppermost web 2 and the record copy web 5 are removed from the assembly as by a decollator and the assembly is further separated into individual form lengths as by a burster. Alternatively and especially in the case of a user of small quantities of forms the assembly may be separated into form lengths by hand and if necessary additional information applied and selected parts removed.

Because the uppermost sheet of the envelope assembly is of transparent material the data typed or otherwise applied to the copy record sheet 22 and reproduced on the copy record sheet 27 is visible on the record copy sheet 27 through the transparent material sheet 26 and is utilized for postal purposes.

When the merchandise arrives at its destination the copy record sheet or sheets 27 is enclosed within the envelope comprising the transparent sheet 26 and the adhesive coating sheet 30 and the one or more record copy sheet may be removed by detaching across the perforation line 13 when such sheet or sheets may be processed.

It will be apparent that the additional record copy webs (as shown in Figs. 1 and 2 at 5 and 7a) may be optionally included depending upon the use to which the assembly is to be put. It may be convenient to have two additional webs as 5 and no additional web as 7a or the reverse may be true. However, in each case the webs are of self contained imaging material on their upper faces and the thickness of the whole assembly should not exceed 21 cms in order that the assembly may be passed through the computer printout.

In the case of an assembly comprising say seven parts it is necessary to include light weight self contained imaging webs of say 23 microns thick and 38 grams weight/38 grams per square metre of paper.

Claims

1. A business forms assembly comprising a file copy sheet and an envelope assembly the said envelope assembly comprising a first outer transparent sheet of protective film material and a second outer sheet having an adhesive coating on its outer face and with a barrier coating thereon with an intermediate copy sheet or sheets between the outer transparent sheet and the outer adhesive coating characterised in that the transparent sheet is of tack material and the second outer sheet is of material to which the tack material adheres by the application of pressure.

2. A business forms assembly according to claim 1 characterised in that the tack material transparent sheet is tack polythene so that the sheet adheres by the application of pressure to the second outer sheet but does not adhere to the internal intermediate copies.

3. A business forms assembly according to claim 1 or 2 characterised in that the intermediate copy sheet or sheets are die cut to provide a window through which the transparent sheet and second outer sheet are secured together by the application of pressure.

4. A business forms assembly according to any one of the preceding claims wherein the assembly comprises a plurality of continuous webs.

5. A business forms assembly according to any one of the preceding claims characterised in that the copy record sheets comprise a self copy coating constituted by a self contained imaging layer.

6. A business forms assembly constructed and arranged substantially as herein described with reference to the accompanying drawings.

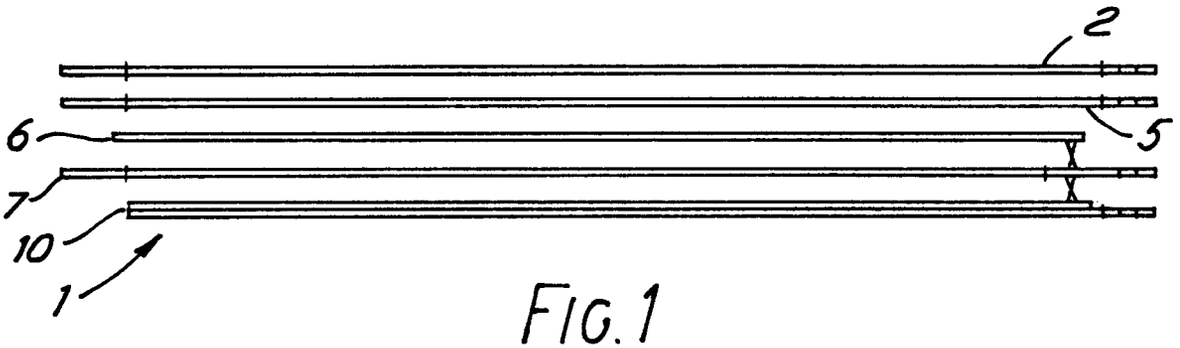

FIG. 1

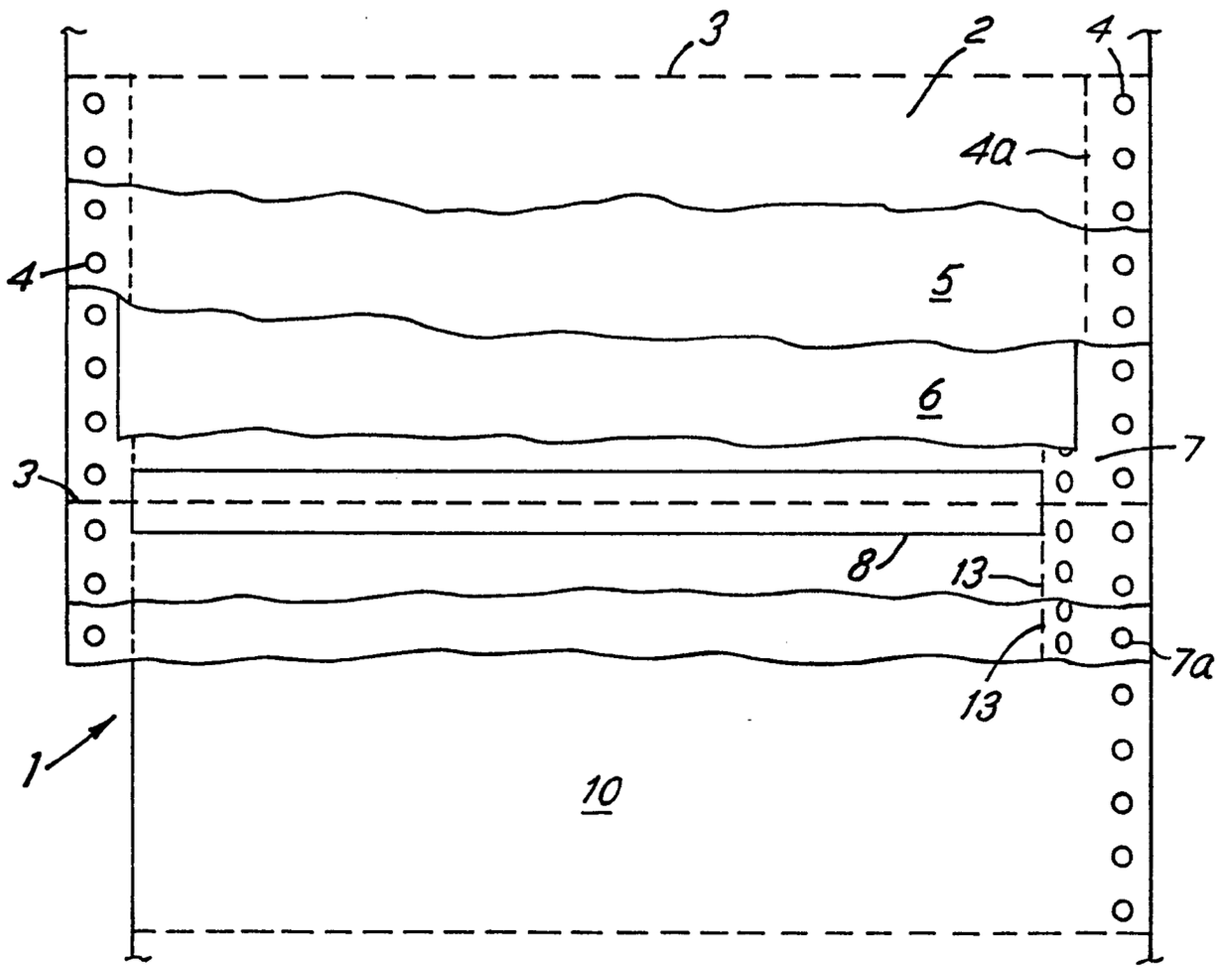

FIG. 2

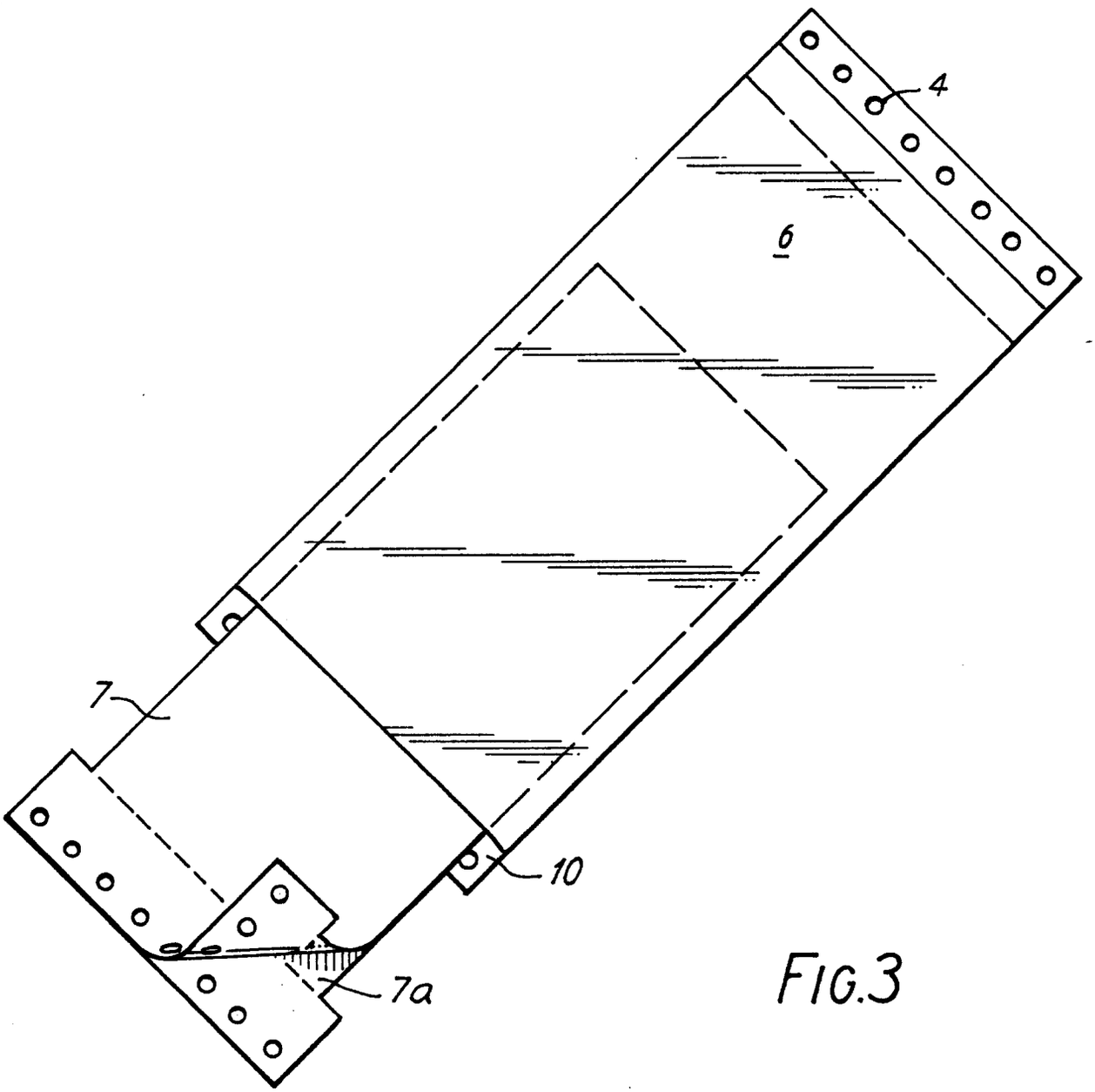

FIG.3

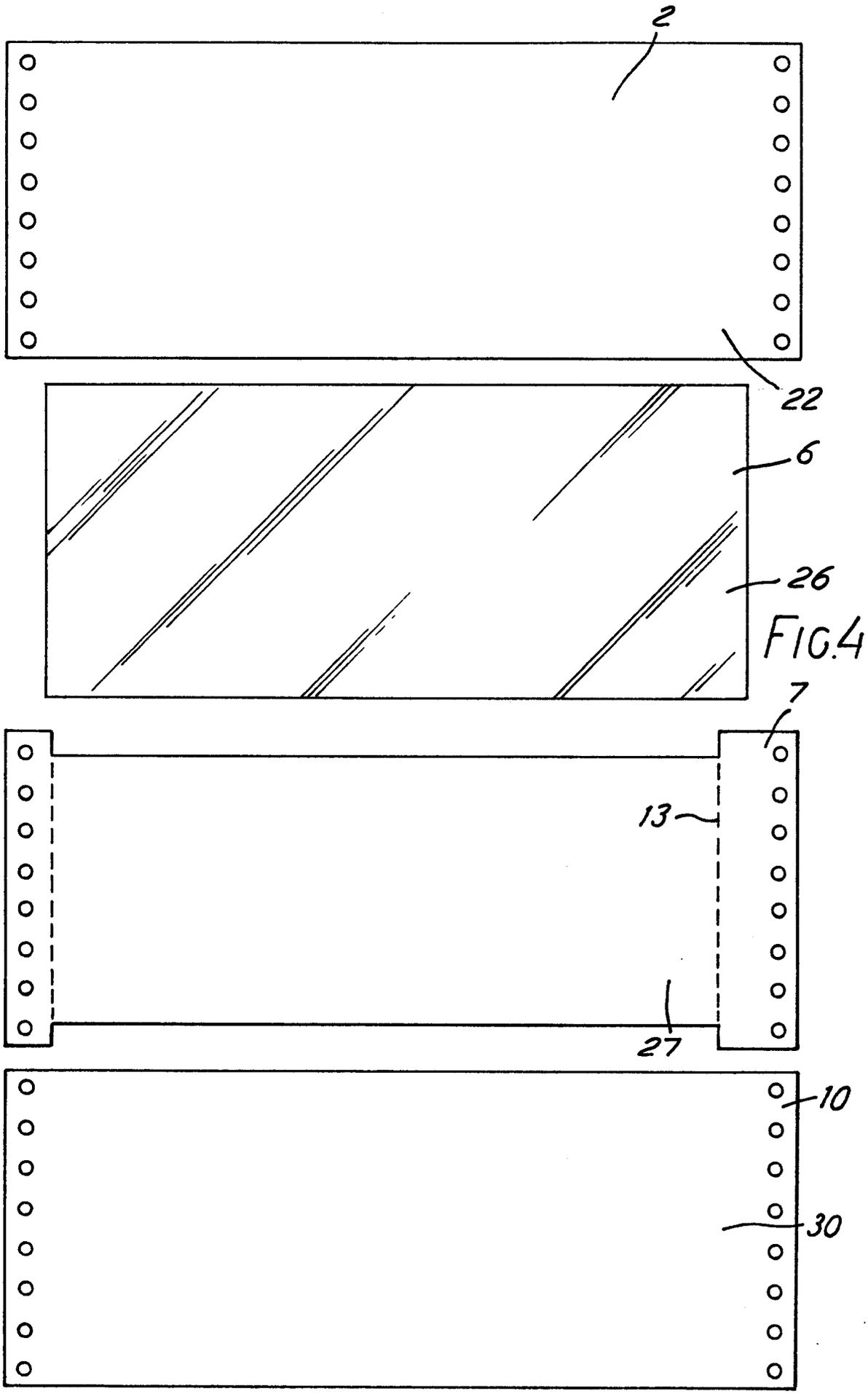

FIG.4

European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 86 30 6840

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	FR-A-2 536 702 (LES PETITS FILS DE LEONARD DANEL) * Claim 1; page 4, lines 1,2; figures 1,2 * ---	1-4,6	B 65 D 27/00
A,D	CA-A-1 116 137 (PRO FORMS LTD.) * Figures 8,9; claims 1,2; page 7, lines 3-6 * ---	1,5	
A	FR-A-2 337 625 (NICHAM & LEVEAU) * Figures 1,2; claims 1,2 * ---	1,3,4, 6	
A,D	US-A-4 153 163 (ALDERMAN) * Figures 1,2; claims 1,4 * ---	1,3,5, 6	
A	US-A-3 580 489 (OETTINGER) * Figure 5; claim 1 * ---	1,6	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	DE-A-2 753 451 (ALFONS HAAF POLYÄTHYLENWERK) * Page 3, lines 24-29 *	3	B 65 D 27/00 B 41 L 1/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	28-11-1988	EVANS A.J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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