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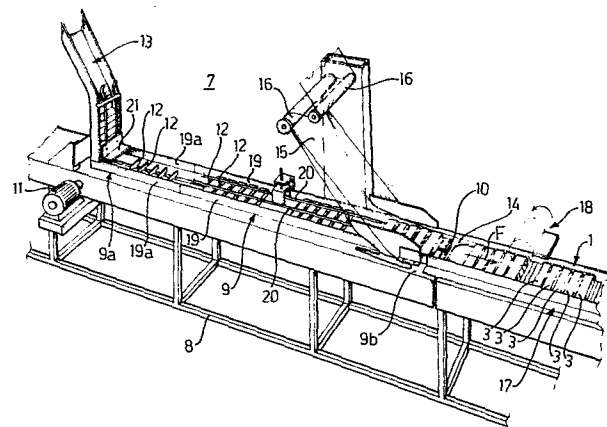
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54 **Method and machine for packaging several individually wrapped food products.**

57 A method is described for shaping rapidly, safely, and without waste, «multipak» type plastics film-wrapped packages (1) of food products (3) which are individually wrapped. The method comprises the successive steps of taking the products (3) from a store (13) in which they are stacked, conveying them towards a continuously-shaped plastics film wrapper (14) one at a time, and with individual drive, and introducing them one at a time, and with individual drive, into the plastics film wrapper (14) in groups of a predetermined number.



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Method and machine for packaging, by means of a continuously-
shaped plastics film wrapper, several food products individually
wrapped.

TITLE MODIFIED

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The present invention relates to a method and a machine for packaging, by means of a continuously-shaped plastics film wrapper, several food products individually wrapped.

These packages are usually called "multipaks" and contain about five or six food products, for example, chocolate-covered biscuits, which are individually wrapped in plastics film for obvious hygienic reasons. These wrapped products usually have the shape of elongate, flattened parallelepipeds and are arranged flat and side-by-side in the "multipak" package.

Due to the present very high consumption of such wrapped food products which are daily use as snacks in schools and widely distributed in bars and the like, their production is satisfactorily carried out by mass production methods and means. There is a need to form, in an equally satisfactory manner, multiple packs of several wrapped food products, which are required to satisfy the demands of transportation and distribution.

Now, in order to form these multiple packs, the individual products are deposited flat and parallel to each other on a conveyor belt, as soon as they leave the machine which wraps them individually in plastics film. There is a stop at the end of the belt, against which the products are brought to rest against one another. At the stop is a transverse pusher of such a size as to embrace the desired number of products intended to constitute the multiple pack. On operation of the pusher, the group of products is displaced from the belt and pushed into the space between two successive pusher plates of a chain conveyor moving

towards a continuously-shaped plastics film wrapper. The group of products is inserted in the wrapper and thus wrapped in cellophane.

Although advantageous from various aspects and widely used, this procedure involves some disadvantages. 5 In particular, the group of products frequently does not enter the shaping plastics film wrapper in the desired regular arrangement, but in an anomalous manner. Indeed, since the individual products are wrapped in plastics film they have generally irregular external dimensions 10 and unpredictable behaviour during handling because of the heat sealed ends of the plastics film wrappings.

The anomalous arrangement of the group of products results in the formation of a multiple pack which is itself defective and often even compromises the heat- 15 sealing and cutting of the plastics film between one pack and another. In such a case, a stoppage of the production cycle is incurred, in addition to wasted production.

The problem which is at the basis of the present 20 invention is that of devising a method of the type specified, having operating characteristics which will satisfy the above requirements while simultaneously overcoming the disadvantages cited with reference to the prior art.

25 This problem is resolved by a method of the type specified, which is characterised in that it includes the successive steps of taking the food products from a store in which they are stacked, conveying them one at a time and with individual drive toward the shaping 30 wrapper and introducing them one at a time, and with individual drive, into the wrapper in groups of predetermined number.

To advantage, the arrangement of groups of predetermined number is achieved by periodically stopping the removal of the products from the store.

5 Further characteristics and advantages of the method according to the present invention will emerge from the following description of a machine for carrying out the method, which is described by way of non-limiting example with reference to the appended drawings, in
10 which:

Figure 1 is a perspective view of package of "multipak" type shaped by a method and machine according to the present invention:

Figure 2 is a perspective view of a machine
15 according to the present invention, and

Figure 3 is a perspective view of a machine according to the invention, in accordance with a further embodiment of the invention.

With reference to the appended drawings, a multiple package of the so-called "multipak" type,
20 generally indicated 1, contains in a plastics film wrapper 2, five food products each indicated 3, and individually wrapped in respective plastics film wrappings indicated 4; the ends of the plastics film wrappers 2, 3 are heat sealed, forming edges indicated 5 and 6
25 respectively.

The food products 3, for example, chocolate-covered biscuits, have the shape of elongate, flattened parallelepipeds and are arranged side-by side and flat in the package 1.

30 A machine for carrying out the method according to the invention is generally indicated 7. The machine 7 comprises a support frame 8, and a chain conveyor 9 having a closed chain 10 driven around two pulleys, not shown, by drive means 11.

A plurality of pusher plates, each indicated 12, is associated with the chain 10 and is arranged therealong in groups of five, corresponding to the desired number of products 3 to be wrapped in each package 1. In particular, within the limits
5 of each group, the pusher plates are equally spaced with a spacing slightly greater than the width of the individual products 3. The groups of pusher plates are spaced from each other by a length equivalent to about three spacings.

10 The chain conveyor 9 extends between a store 13 in which the products 3 coming from a conventional wrapping machine are stacked, and a plastics film wrapper 14 which is being shaped continuously. The wrapper 14 is shaped conventionally from a sheet of plastics
15 film 15 which is unrolled through idle rollers 16 from a reel, not shown, being folded on itself to form at first a funnel-shaped mouth and then a tubular envelope, and heat sealed along the folded and juxtaposed edges.

20 The chain conveyor 9 has one end 9a surmounted by the stack of products in the store 13, and its opposite end 9b leading into the funnel-shaped mouth of the wrapper 14.

Downstream of the conveyor 9, the machine 7
25 includes a conveyor belt 17 which is essentially a continuation of the chain conveyor, as well as a conventional head 18 for heat sealing and cutting of the tubular wrapper 14.

The chain conveyor 9 also has lateral guide
30 walls for the products 3, indicated 19, the gauge of which corresponds to the length of the individual products 3. Along a section 19a of predetermined length close to the store 13, the walls 19 diverge slightly towards the store
35 to form a lead-in section for the products 3.

Rods 20 are fixed releasably above the chain conveyor 9 along substantially its entire length, while a horizontal plate 21 is fixed to the store 13 above the chain conveyor.

5 The operation of the machine 7 according to the invention is described below with reference to Figure 2.

10 When the chain 10 is set in motion in the direction of arrow F, each pusher plate 12 removes a respective product 3 from the store 13, and conveys it with positive drive towards the shaping wrapper 14 until it introduces it therein. In this way, the individual products 3 in the store 13 are continuously transported and introduced into the
15 shaping wrapper 14 one at a time with individual drive, and arranged in groups of five in accordance with the arrangement of the pusher plates 12 in groups of five.

20 During the removal of a product 3 from the store 13, the plate 21 prevents the product 3 just removed from jumping upwardly due to the other products 3 still in the stack pressing downwardly by gravity. During transport, the heat sealed edges 6 are folded by the portions 19a of the walls 19 into positions
25 in which they are close against the products 3. The rods 20 ensure that the products 3 do not rise from the conveyor 9, for example, due to sticking or springing back of the heat sealed edges 6.

30 As soon as they are inserted in the tubular wrapper 14, the products 3 are conveyed thereby along the conveyor belt 17, along which the tubular wrapper is heat sealed and cut at the spaces between one group of products 3 and another to ~~shape~~ the desired packages 1.

The invention devised in this way can be varied, all the variations lying within the scope of the invention.

For example, the arrangement of the
5 wrapped products in groups of predetermined number may be achieved by the periodic stopping of a conveyor provided with pusher plates all along its length without break, rather than by stopping
10 the removal from the store by means of a conveyor having pusher plates arranged in groups, as described previously.

In this case, with reference to Figure 3, the machine 22 comprises a support frame 23 with a chain conveyor 24 having a closed chain 25
15 driven around two pulleys, not shown, by intermittent drive means 26. Associated with the chain 25 is a plurality of pusher plates, each indicated 27, equally spaced therealong without a break and with spacings slightly greater than the width of the
20 individual products.

The chain conveyor 24 extends between a store 28, in which the products 3 from the conventional wrapping machine are stacked in five stacks, and a
25 plastics film wrapper 29 which is being shaped continuously and is the same as the wrapper 14 of the machine 7 described above.

The chain conveyor 24 has an end section 24a adjacent the five stacks of the store 28 and its
30 opposite end 24b leads into the funnel-shaped mouth of the wrapper 29.

The store 28 is provided with five pushers 30, each placed in correspondence with a respective stack of products 3.

Downstream of the conveyor 24, the machine 22
35 includes a belt conveyor 31 and a heat sealing and cutting head 32 exactly like the conveyor belt 17 and the head 18 of the machine 7 described above.

Between one stoppage and the next, the chain 25 effects a movement equal to five spaces.

This movement is effected at a speed greater than the speed of the wrapper under formation.

5 In particular, at least an initial greater part of this movement is made with increasing speed.

The operation of the machine 22 is described below.

During a stoppage of the chain 25, the pushers 30 are actuated to remove five products 3 from the store 28 and transfer them onto the conveyor 24, 10 each being inserted into a space between two pusher plates 27.

At this point, the chain is set in motion in the direction of arrow G to carry the products 3 towards the ~~shaping~~ plastics film wrapper 29, each product 15 being driven positively by a respective pusher plate 26. After moving five spaces, the chain stops again to receive, by means of the pushers 30, a further five products 3, and so on, to completely fill the chain.

When the products 3 reach the end 24b of the 20 conveyor 24, they are introduced, up on movement of the chain between one stop and the next, one at a time, and with individual drive, into the plastics film wrapper 29 which draws them in the direction of the arrow G. The periodic stoppage of the belt causes 25 an intermittent feed of the products 3 to the wrapper 29 so that the products 3 are arranged therein in groups of five.

Since the speed of the wrapper is less than the speed of the chain 25, and the greater number of the 30 five products 3 intended to shape an individual group are introduced into the wrapper at an increasing speed, the products 3 themselves are tightly packed against each other while becoming enclosed by the



wrapper 29.

Subsequently, the wrapper 29 containing the groups of products encounters the head 32, which effects in steps the heat sealing and cutting of the wrapper itself. In this way, the desired packages 1 are obtained and, in this case, are entirely rigid and compact due to the fact that the products 3 therein are packed tightly against each other.

The main advantage of the present invention lies in the fact that it allows multiple packages of the so-called "multipak" type to be obtained rapidly and safely with an entirely regular shape and consistency.

In accordance with a further aspect, the invention provides rigid compact multiple packages by virtue of the fact that the products therein are packed tightly against each other.

CLAIMS

1. Method for shaping, by means of a continuously-shaped plastics film wrapper, multiple packages each containing a group of a predetermined number of food products individually wrapped, characterised in that it comprises the successive steps of taking the food products from a store in which they are stacked, conveying them towards the shaping plastics film wrapper one at a time and with individual drive, and introducing them one at a time, and with individual drive, into the plastics film wrapper in groups of predetermined number.
2. Method according to Claim 1, characterised in that the arrangement of the products in the groups of predetermined number is effected by periodically stopping the taking of the products from the store.
3. Machine for shaping multiple packages, each containing a predetermined number of food products individually wrapped in plastics film in accordance with the method of Claims 1 and 2, characterised in that it includes a chain conveyor which extends between a store, in which the products are stacked, and a plastics film wrapper under continuous formation, and has one end surmounted by the stack of products and the opposite end leading into the wrapper under formation, and a plurality of pusher plates associated with the chain conveyor and arranged therealong in groups corresponding to said predetermined number.
4. Method according to Claim 1, characterised in that the arrangement of the products in the groups of predetermined number is effected by periodically stopping the conveyance of the products towards the shaping plastics film wrapper.

5. Method according to Claim 4, characterised in that the introduction of the products of a group into the wrapper, one at a time and with individual drive, is effected at a speed greater than the speed of the wrapper.

6. Method according to Claim 5, characterised in that the introduction of the products of a group into the wrapper, one at a time and with individual drive, is effected at an increasing speed for a greater number of products in the group.

7. Machine for shaping multiple packages, each containing a group of a predetermined number of food products individually wrapped, in accordance with the method of Claim 5, characterised in that it includes a chain conveyor which extends between a store in which the products are stacked in a group of stacks of said predetermined number, and plastics film wrapper under continuous formation, and has an end section by the side of the group of stacks and the opposite end leading into the wrapper under formation, a plurality of pusher plates associated with the chain conveyor and equally spaced therealong, intermittent drive means for advancing and stopping the conveyor periodically, and pusher means for transferring a group of products from the stacks to the conveyor during the stoppages.

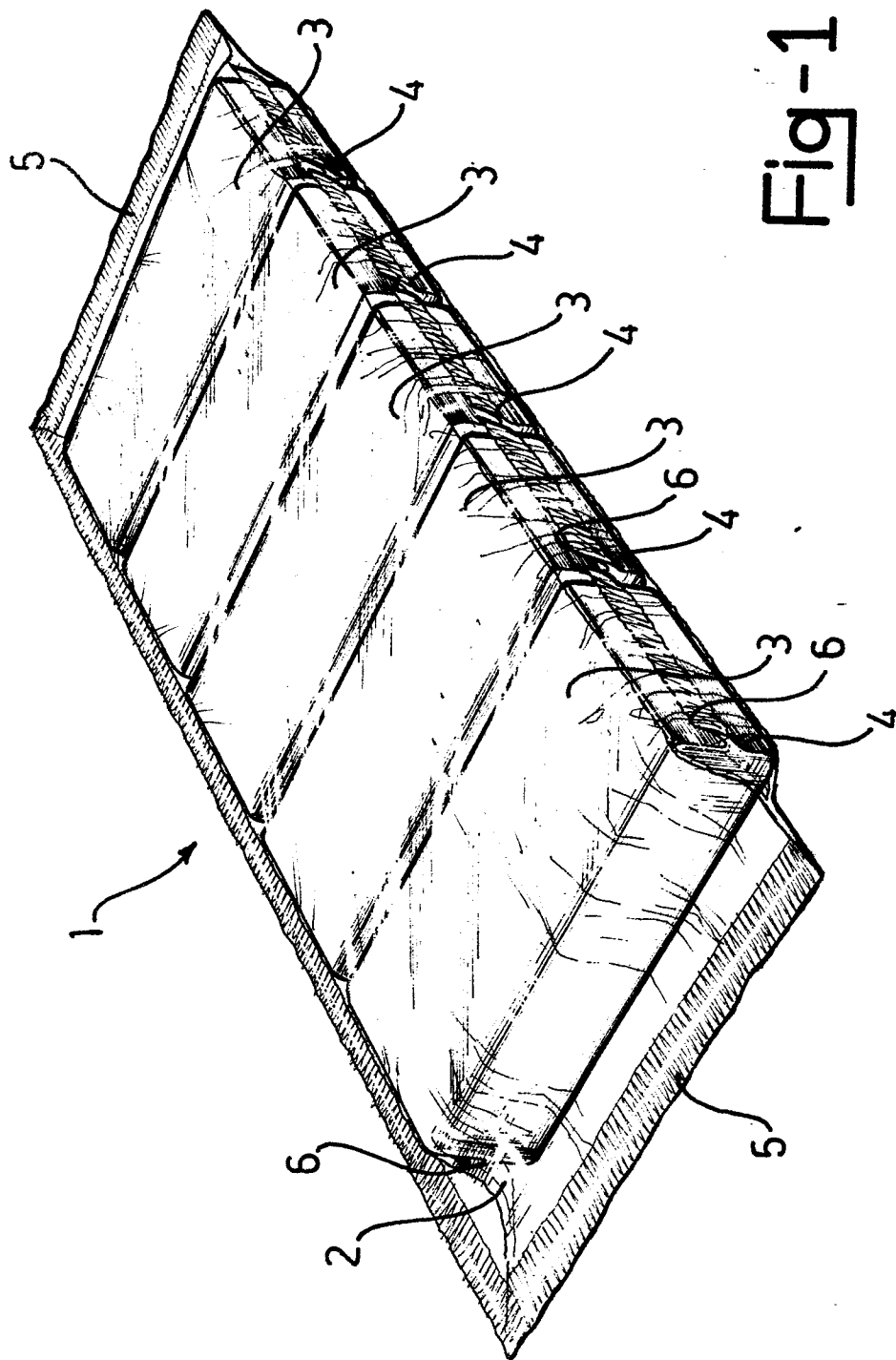
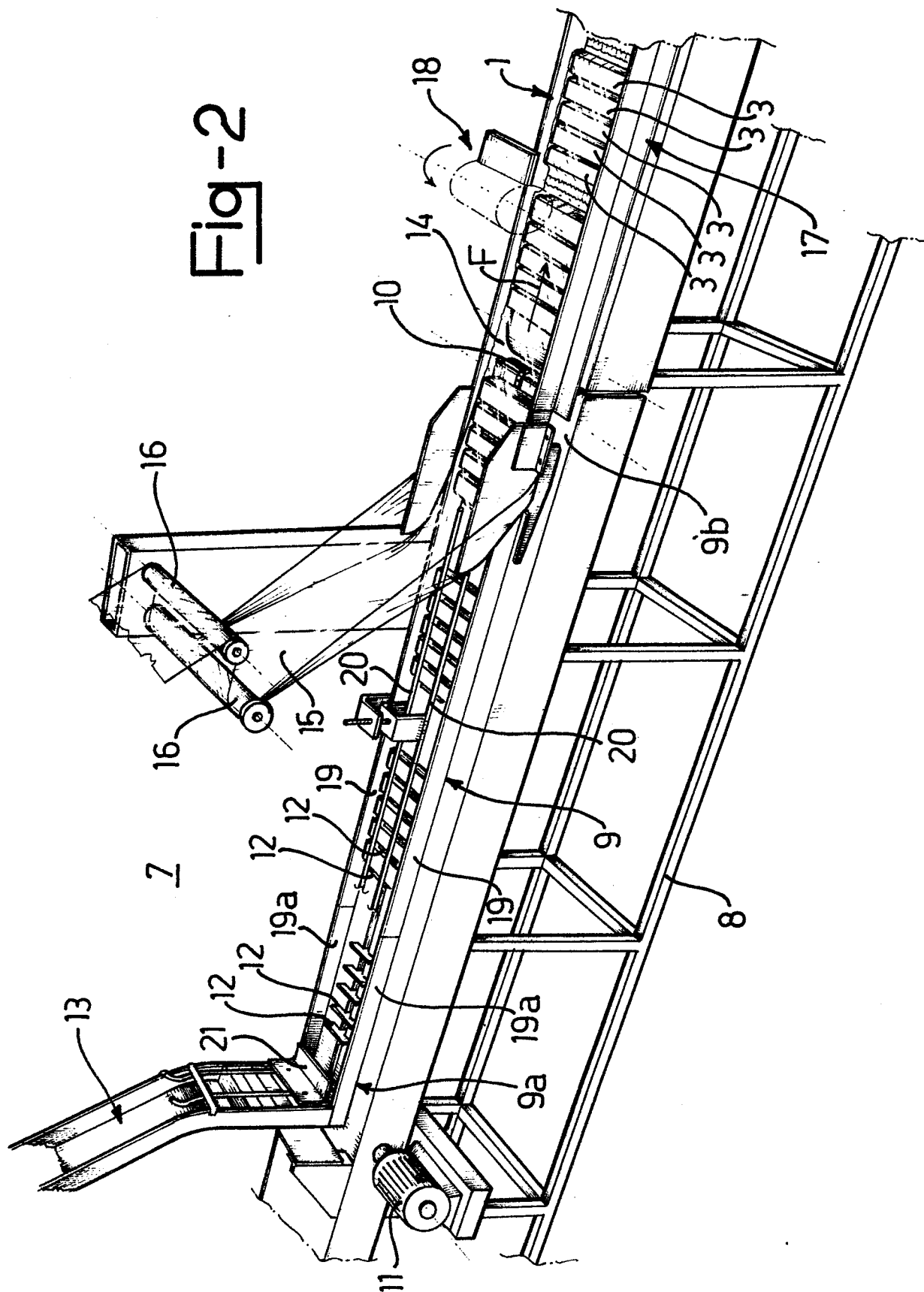


Fig-1

Fig-2





European Patent
Office

EUROPEAN SEARCH REPORT

0077302
Application number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 82830078.0
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	GB - A - 1 340 383 (PACKAGE MACHINERY) * Totality * ---	1,3,4,7	B 65 B 9/06
X	CH - A - 400 892 (SIG) * Totality * ---	1,3,4,7	
X	CH - A - 374 587 (SIG) * Totality * -----	1,3,4,7	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			B 65 B 9/00 B 65 B 11/00 B 65 B 19/00 B 65 B 23/00 B 65 B 25/00 B 65 B 35/00 B 65 B 51/00
X	The present search report has been drawn up for all claims		
Place of search VIENNA		Date of completion of the search 26-01-1983	Examiner MELZER
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	