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(54) Wrapping device for producing packets

(57) A wrapping device (2) presenting at least one seat (9) for receiving a respective packet (4) and traveling in steps along a given path extending through a succession of holding stations (9a) at which the seat (9) is arrested, and wherein at least one heating element (22) is associated with and moves together with the seat (9) along the path; the heating element (22) being a passive element partially defined by a heat accumulating block (24) for receiving heat from induction heating members (30) distributed along the path and each located at a respective holding station (9a).

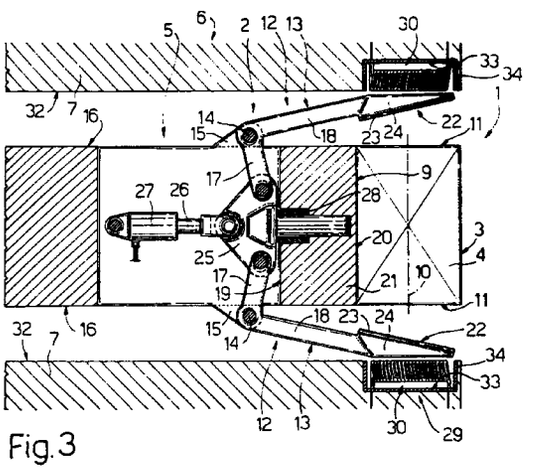

Fig.3

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Description

The present invention relates to a wrapping device for producing packets.

The present invention may be used to advantage on overwrapping machines for packets of cigarettes - to which the following description refers purely by way of example - but may equally be used to advantage on any wrapping machine on which superimposed portions of wrapping material with adhesive material in between are to be heated.

On overwrapping machines, finished packets produced on a packing machine are covered with a sheet of normally transparent heat-seal material, which is folded about the packet to form a tubular wrapping, the ends of which extend beyond the ends of the packet on to which they are folded to define a protective outer wrapping.

On overwrapping machines of the above type, the folded ends are normally stabilized by means of heat sealing devices located at one or more heat seal stations along the path of the packets, and which heat seal the packets when these are arrested at the stations.

On one known overwrapping machine of the above type, as relatively little time is available for heat sealing the folded ends of the outer wrapping, the heat sealing devices must be brought to such high temperatures as to damage the sheet of overwrapping material if for any reason the machine slows down.

One attempt to overcome the above drawback has been to equip the machines with movable heat sealing devices, i.e. which travel along with the packets along a portion of the machine, and therefore remain contacting the packets for a relatively long period of time, or at any rate long enough to permit the heat sealing devices to operate at relatively low temperatures.

Though successfully eliminating the drawback, such a solution seriously complicates the mechanical design and circuitry of the machine, on account of the movable heat sealing devices, which normally feature electric heating systems, requiring movable brushes and electrified tracks which, in addition to complicating the design of the machine, also result in a considerable increase in manufacturing and maintenance cost.

It is an object of the present invention to provide a wrapping device designed to overcome the aforementioned drawbacks.

According to the present invention, there is provided a wrapping device for producing packets, the device comprising at least one seat traveling in steps along a given path extending through a succession of holding stations at which the seat is arrested; and at least one heating element traveling with said seat along said path; characterized in that said heating element is a passive element comprising a portion defining a heat accumulator; induction means being provided, preferably in a fixed position, in at least some of said holding stations to supply heat to said accumulator.

A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a plan view, with parts removed for clarity, of a portion of a preferred embodiment of the wrapping device according to the present invention;
Figure 2 shows a front view of a detail in Figure 1;
Figures 3 and 4 show respective radial sections along lines III-III and IV-IV in Figure 1.

Number 1 in Figure 1 indicates a cellophaning machine comprising an overwrapping device 2 for forming a wrapping 3 of transparent material about packets 4 of cigarettes. Device 2 comprises a conveyor wheel 5 supported on a frame 6 and located between two walls 7 of frame 6 so as to rotate anticlockwise (in Figure 2) in steps about an axis 8 perpendicular to walls 7. Wheel 5 presents a number of peripheral radial seats 9 equally spaced about axis 8, and which are open at their opposite axial ends, and each receive a respective packet 4 with its longitudinal axis 10 parallel to axis 8, and with two end walls 11 of wrapping 3 perpendicular to axis 8 and located at the opposite axial ends of seat 9 facing respective walls 7.

At each step in the rotation of wheel 5 about axis 8, seats 9 are fed forward by a distance equal to that between two adjacent seats 9, and, at the end of each step, each seat 9 is arrested at a hold station 9a.

Each wrapping 3 is formed beforehand in known manner (not shown) by folding a sheet of wrapping material (not shown) about packet 4 to form a tubular wrapping (not shown), the opposite end portions (not shown) of which project beyond the respective ends of packet 4, and are folded in known manner (not shown) to form four tabs (not shown) which are folded squarely on to one another and stabilized by heat sealing as packet 4 is fed forward by wheel 5.

For this purpose, for each seat 9, wheel 5 presents a pair of compacting members 12 movable in opposite directions to and from an operating position contacting the outer surface of respective walls 11, and each comprising a square rocker arm 13 pivoting centrally on a respective pin 14 perpendicular to axis 8, and mounted between the ears of a respective fork 15 projecting from a respective axial end surface 16 of wheel 5. Rocker arm 13 comprises two arms 17 and 18 extending on either side of pin 14, and of which arm 17 extends inside an axial through cavity 19 formed through wheel 5 radially inwards of seat 9 and separated by a wall 21 from the bottom surface 20 of seat 9. Arm 18 on the other hand extends outside respective surface 16, and is fitted integrally on its free end with a heating element 22 facing a respective axial end of respective seat 9. Each heating element 22 comprises a sealing plate 23 which, in use, is positioned contacting the outer surface of respective wall 11 when respective compacting member 12 is in the operating position; and a heat accumulating block 24

contacting the surface of plate 23 facing respective wall 7.

As shown more clearly in Figures 3 and 4, arm 17 of each compacting member 12 is connected to arm 17 of the other compacting member 12 via the interposition of a connecting rod 25, the central portion of which is hinged to the free end of the output rod 26 of a linear actuator 27 located radially inside respective cavity 19 and which provides for moving connecting rod 25 radially outwards in opposition to a spring 28 interposed between connecting rod 25 and wall 21.

In addition to wheel 5, wrapping device 2 also comprises a heating unit 29 in turn comprising a succession of pairs of induction heating members 30; and each heating member 30 - normally comprising a solenoid - in each pair is supported on frame 6 at a respective station 9a, and positioned facing and adjacent to accumulating block 24 of a respective compacting member 12 stationary in station 9a. More specifically, and as shown in Figures 3 and 4, each wall 7 is defined, on the side facing wheel 5, by a surface 31 which presents a recessed portion 32 located a greater distance from wheel 5 than surface 31, and extending over the path portion of compacting members 12 along which members 12 are maintained in the raised idle position. Surface 31 and recessed portion 32 present a number of cavities 33, each located at a station 9a, and each housing a cup-shaped casing 34 for a respective heating member 30.

Operation of wrapping device 2 is self-explanatory from the foregoing description. It should be pointed out, however, that, on the one hand, heating members 30 are fixed heating elements requiring no power supply brushes or similar; and, on the other, compacting members 12, by traveling with packets 4, may cooperate with the packets for a relatively long period of time and at such relatively low operating temperatures as to in no way impair the material of wrappings 3.

Though described as forming part of a cellophaning machine 1, device 2 may of course also be applied to other types of machine. For example, wheel 5 may be the folding or drying wheel of a packing machine, wherein, as opposed to heat sealing, compacting members 12 provide simply for securing in position the gummed parts of the wrapping and drying the gum between the parts.

Finally, device 2 may be operated as described on sheets of wrapping material at least partly comprising metal material (e.g. foil or similar) for heat sealing the superimposed portions of the sheets.

Claims

1. A wrapping device for producing packets (4), the device comprising at least one seat (9) traveling in steps along a given path extending through a succession of holding stations (9a) at which the seat (9) is arrested; and at least one heating element (22) traveling with said seat (9) along said path; characterized in that said heating element (22) is a passive element comprising a portion defining a heat accumulating block (24); induction means (30) being provided in at least part of said holding stations (9a) to supply heat to said accumulating block (24).

2. A device as claimed in Claim 1, characterized in that said induction means (30) are located in a fixed position in respective said holding stations (9a).

3. A device as claimed in Claim 1 or 2, characterized in that it comprises a conveyor (5) presenting a number of equally spaced said seats (9) and moving in steps to feed said seats (9) along said path; said conveyor (5) supporting at least one said heating element (22) for each said seat (9).

4. A device as claimed in any one of the foregoing Claims, characterized in that said heating element (22) is movable, in relation to said seat (9), to and from a heating operating position.

5. A device as claimed in any one of the foregoing Claims, characterized in that each said heating element (22) forms part of a compacting member (12) which, when the heating element (22) is in said heating operating position, cooperates, in use, with one end of a respective packet (4) housed inside said seat (9).

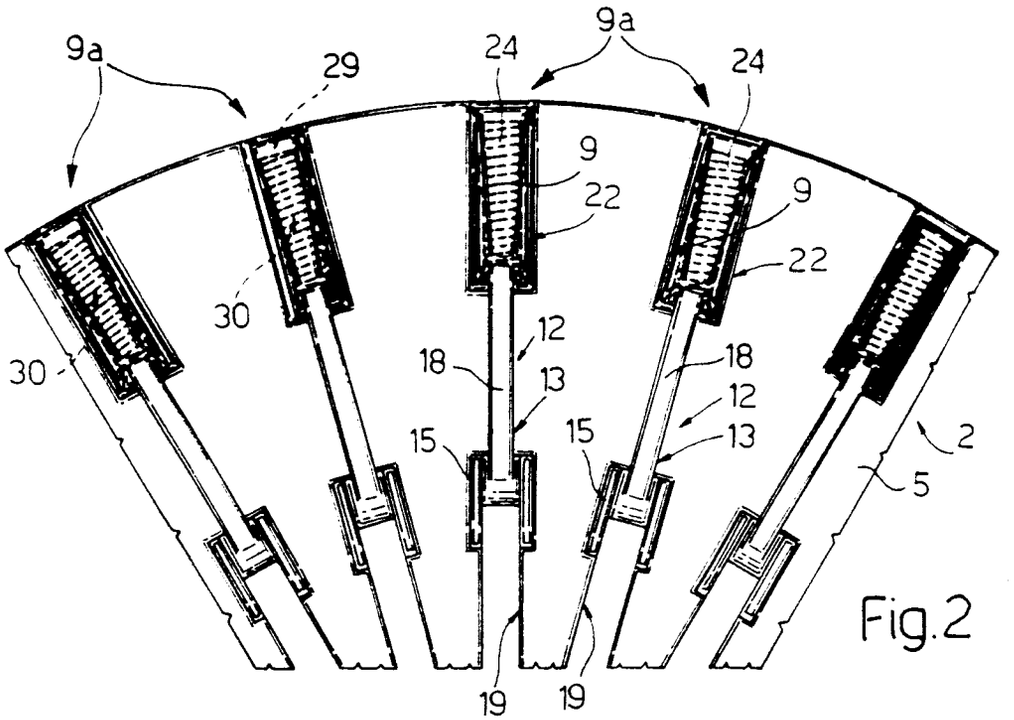
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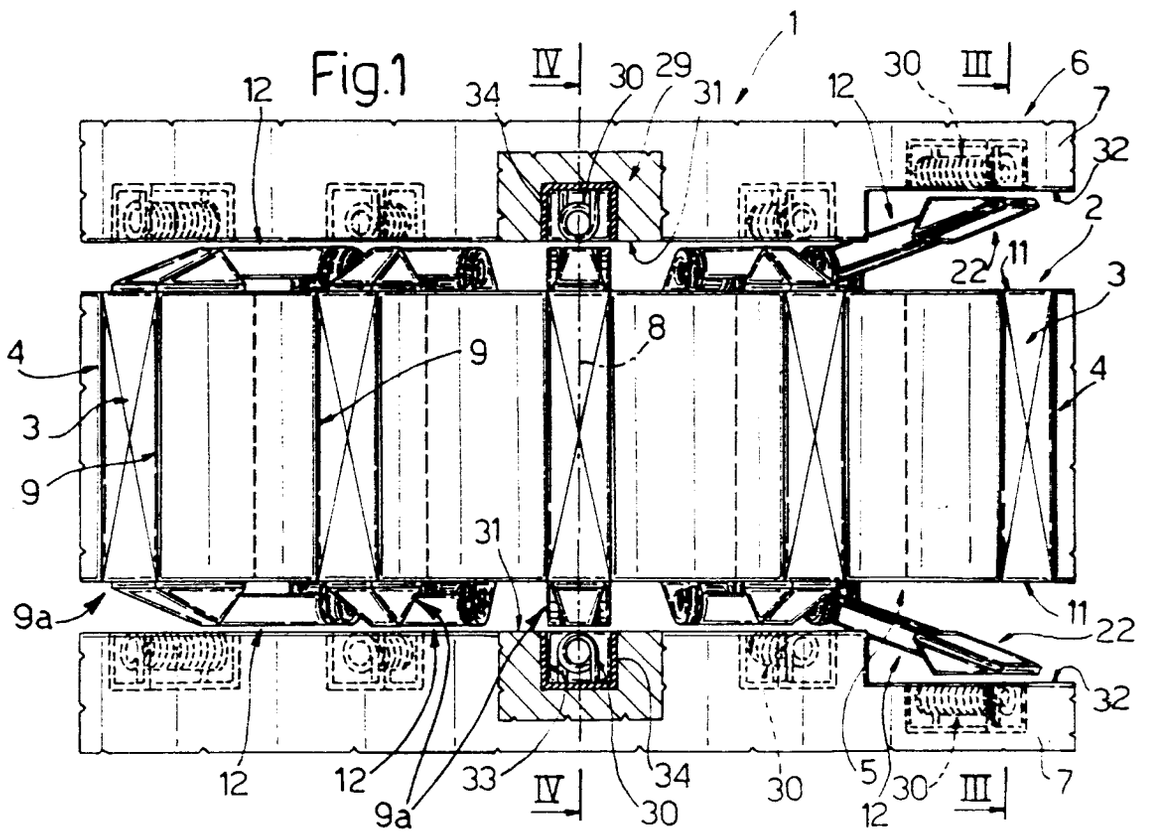
Fig.2

Fig.1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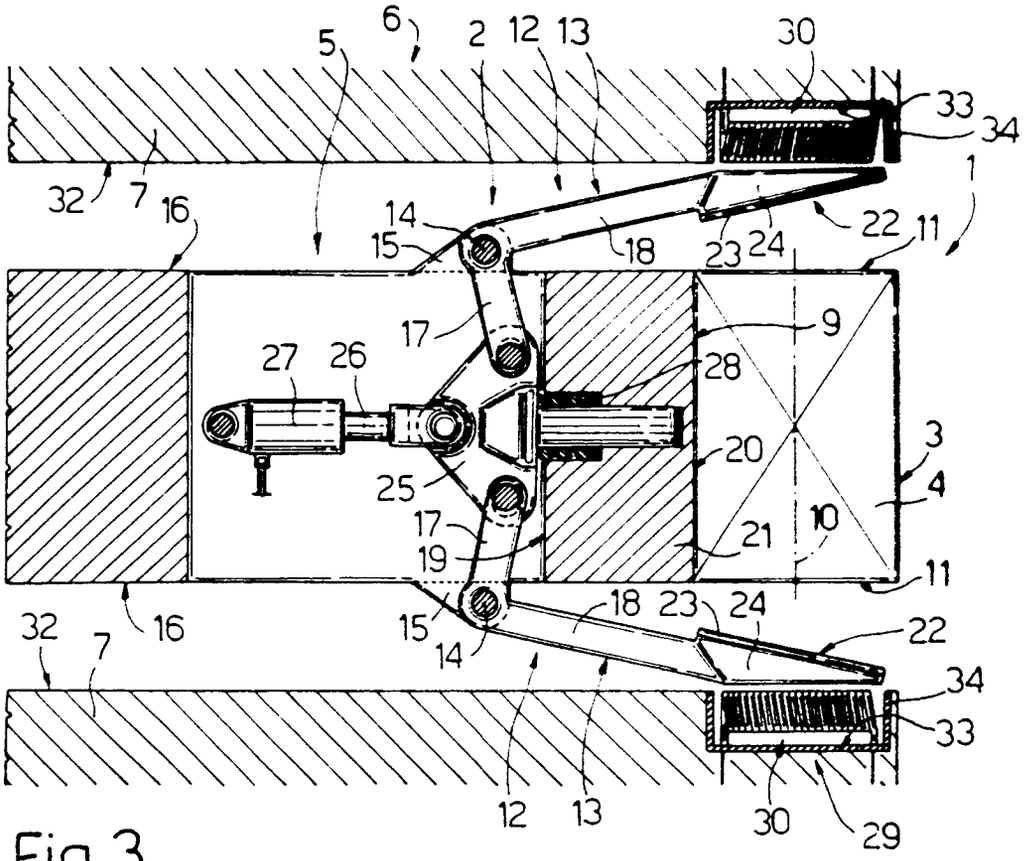
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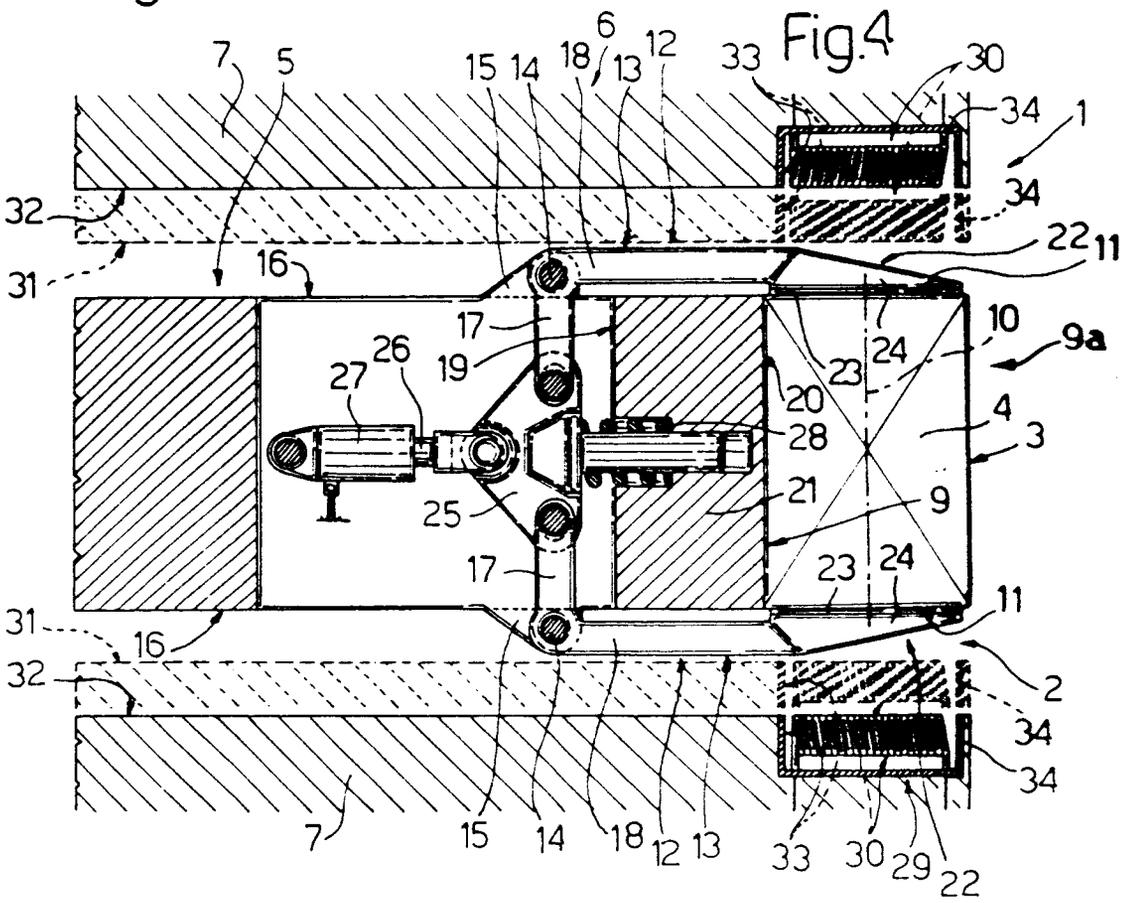
Fig.3

Fig.4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EUROPEAN SEARCH REPORT

Application Number
EP 95 11 2079

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.6)
X	DE-A-37 17 621 (VEB KOMBINAT NAGEMA) 14 January 1988 * the whole document *	1,3-5	B65B51/14
A	US-A-3 380 227 (D.H. YOUNGMAN ET AL) 30 April 1968 * column 3, line 57-69; figure 1 *	1,3-5	
A	FR-A-2 277 732 (G.D. SOCIETA PER AZIONI) 6 February 1976 * page 10, line 3-8; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) B65B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 November 1995	Grentzius, W

CATEGORY OF CITED DOCUMENTS

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