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(54) **Apparatus for transporting bag packages**

(57) During transfer of cushion-like bag packages (2) from a producing machine (11) to a collective packaging device (12), the loose content (3) within them must be uniformly and carefully distributed. For that purpose,

a drive (21) for an oscillatory movement, preferably a double-crank drive, is associated with an endless conveyor belt (15) of the transport device. In order to hold the bag packages on the conveyor belt, the latter is perforated as a suction belt and extends above a negative pressure chamber (31) over the conveying path.

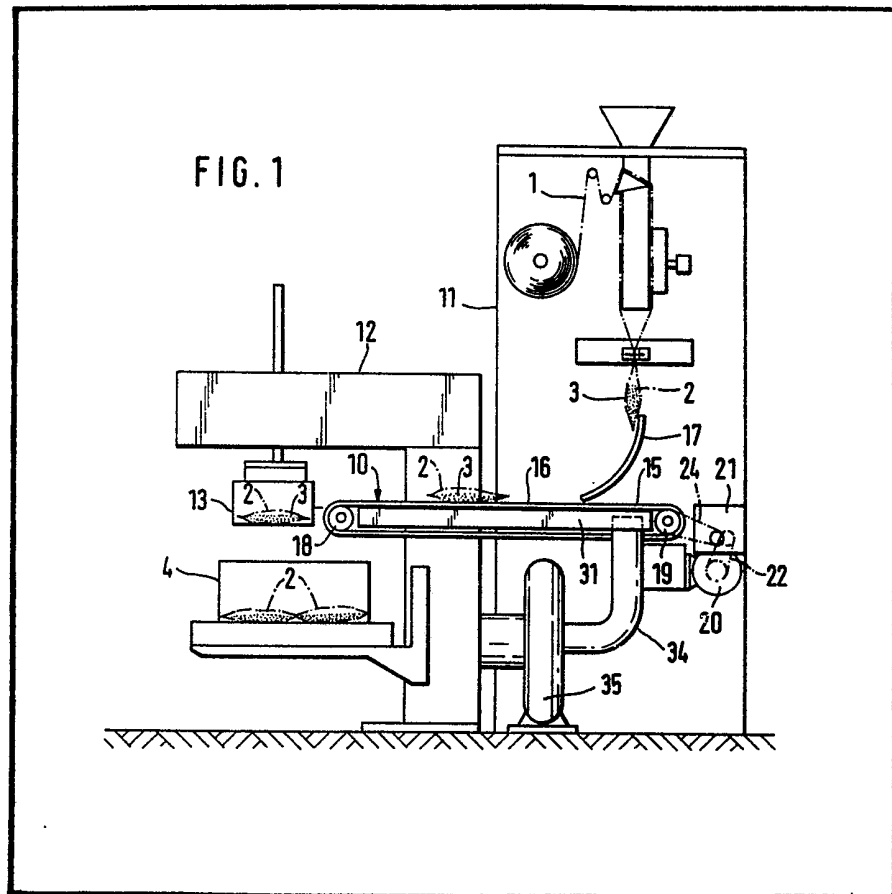


FIG. 1

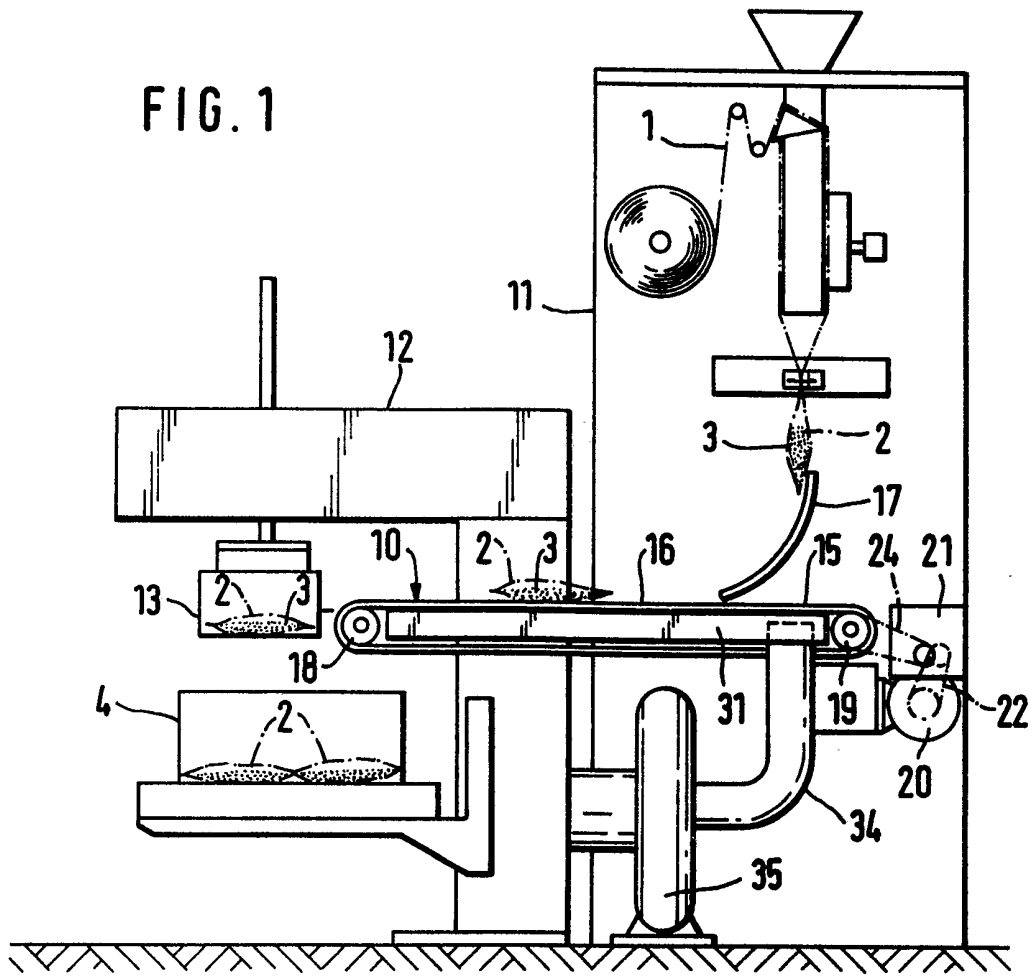


FIG. 3

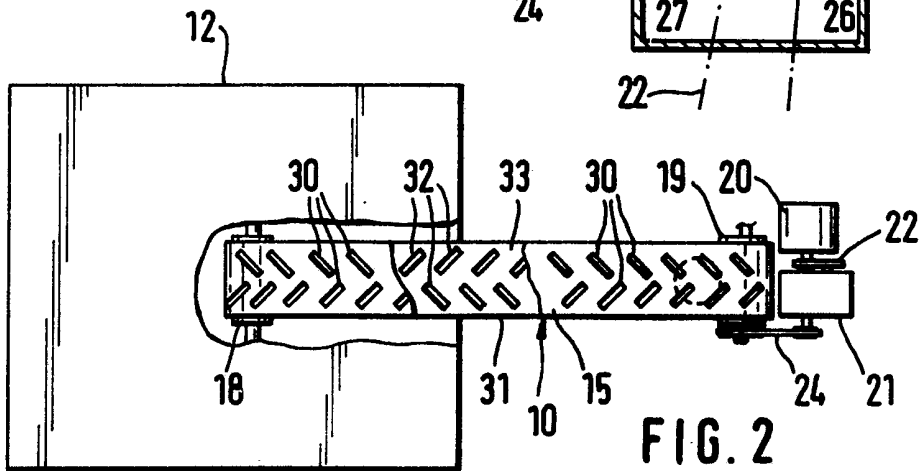
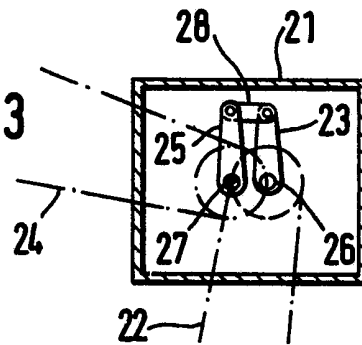


FIG. 2

SPECIFICATION

Apparatus for transporting bag packages

State of the art

The invention originates from a transport apparatus according to the preamble to the main claim. A transport apparatus of this kind is already known from United States Specification 31 07 793, which transfers cushion-like flat bag packages in an horizontal position, produced by a bag forming machine, a filling machine and a closing machine, to a collective packaging apparatus. The known transport apparatus has a conveyor chain moved step by step provided with receiving compartments, into each of which is inserted a particular number of bag packages. A vibrating device comprising a rail contacting a stack of bags from above is associated with the conveying path of the bag packages which transmits vertical oscillations to the bag packages for the uniform distribution of the loose filling material collected at one end of the bag packages. Since the rail exerts pressure on the bag packages parts or pieces of a frangible filling material, for example potato chips, are damaged. Thus, a transport device is desirable in which the filling material is carefully distributed in the bag packages during their conveying without the action of pressure so that the bag packages can be arranged in one collecting container in a space saving manner.

Advantages of the invention

As opposed to this, the transport apparatus in accordance with the invention comprising the characterising features of the main claim has the advantage that pieces of the loose filling material slide in the non uniformly conveyed bag packages due to a plurality of accelerations and decelerations in a horizontal plane, whereby an accumulation is built up.

Advantageous further developments and improvements of the apparatus set forth in the main claim are made possible by the measures set forth in the sub claims.

Drawing

An embodiment of the invention is illustrated in the drawing and is explained in detail in the following description. Figure 1 shows a bag producing apparatus and a collective packaging apparatus comprising a transport device in side view, Figure 2 shows the transport device according to Figure 1 in plan view and Figure 3 shows a drive for the transport device in cross-section and in simplified form.

Description of the invention

A transport device 10 connects a flexible tube bag machine 11 to a collective packaging machine 12. The flexible tube bag machine 11 produces successive bag packages 2 from a strip 1 of packaging material and fills each of them in a vertical position with a portion of pourable loose material 3. The finished bag packages 2 are

deposited in the collective packaging device 12 in an horizontal position by means of a movable depositing head 13 according to a pre-determined depositing pattern in a plurality of layers in a collecting container 4.

The transport device 10 has an endless conveyor belt 15 guided around two rollers 18, 19 and provided with a conveying run 16 extending in an horizontal plane. The conveyor belt 15 is driven by a motor 20 through a drive 21 and one of the rollers 19. The drive 21 transforms the uniform rotary movement of the motor 20 into an oscillating movement so that the conveyor belt 15 is moved with a non-uniform oscillating advancing velocity. This oscillating movement is transmitted to the bag packages 2 delivered successively from the flexible tube bag machine 11 onto the conveyor belt 15 down a chute 17. Thus, by repeated alternate accelerations and decelerations of the bag packages 2 adhering to the conveyor belt 15, loose material contained therein is uniformly distributed which has collected at the forward end of the bag packages 2 on filling in the upright position. It has been shown that at a frequency of substantially 7—10 oscillations per second and an average conveyor velocity of 1.5—2 m/s good results are achieved on a conveyor with a length of 1.5 m.

The drive 21 is preferably a double-crank drive. It has a first crank 23 driven uniformly by a belt drive 22 and a second crank 25 driving the roller 19 through a belt drive 24. The rotary axes 26, 27 of the two cranks 23, 25 are displaced parallel to one another by a predetermined distance influencing the non-uniformity of the drive. The free ends of the cranks 23, 25, which are of equal length, are pivotally connected to one another by a link 28.

So that the bag packages 2 do not slide on the conveyor belt 15 during their non-uniform conveying movement, the belt is formed as a suction belt. It has two series of uniformly distributed slots 30 arranged in arrow formation with respect to each other and its conveying run 16 is guided over a negative pressure chamber 31 the upper wall 33 of which likewise has two series of slots 32 arranged with respect to each other to form arrows. The slots 30 in the conveyor belt 15 have an inclined position displaced with respect to the slots 32 of the negative pressure chamber 31 by 90°. The negative pressure chamber 31 is connected by a line 34 to a suction fan 35.

By way of explanation, it is pointed out that other four link drives, for example swinging block drives, oval gear wheel drives and karden joint drives can also be used for the oscillating driving of the conveyor belt 15.

Claims

1. Apparatus for transporting cushion-like bag packages from a producing apparatus to a collective packaging device comprising an endless circulating conveyor device conveying the bag packages lying down and a device associated therewith for the uniform distribution of the filling

material in the bag packages, characterised in that, a drive (21) for an oscillatory advancing movement is associated with the conveyor device (15).

- 5 2. Apparatus according to claim 1, characterised in that, the conveyor device is designed as an endless conveyor belt (15) comprising a run (16) conveying in a substantially horizontal plane.
- 10 3. Apparatus according to claim 1 or 2,

characterised in that, the conveyor belt (15) is perforated and its conveying run (16) extends over a negative pressure chamber (31).

- 15 4. Apparatus according to one of claims 1 to 3, characterised in that, the drive (21) of the conveyor device has a double-crank drive.

5. Apparatus for transporting bag packages substantially as herein described with reference to the accompanying drawings.