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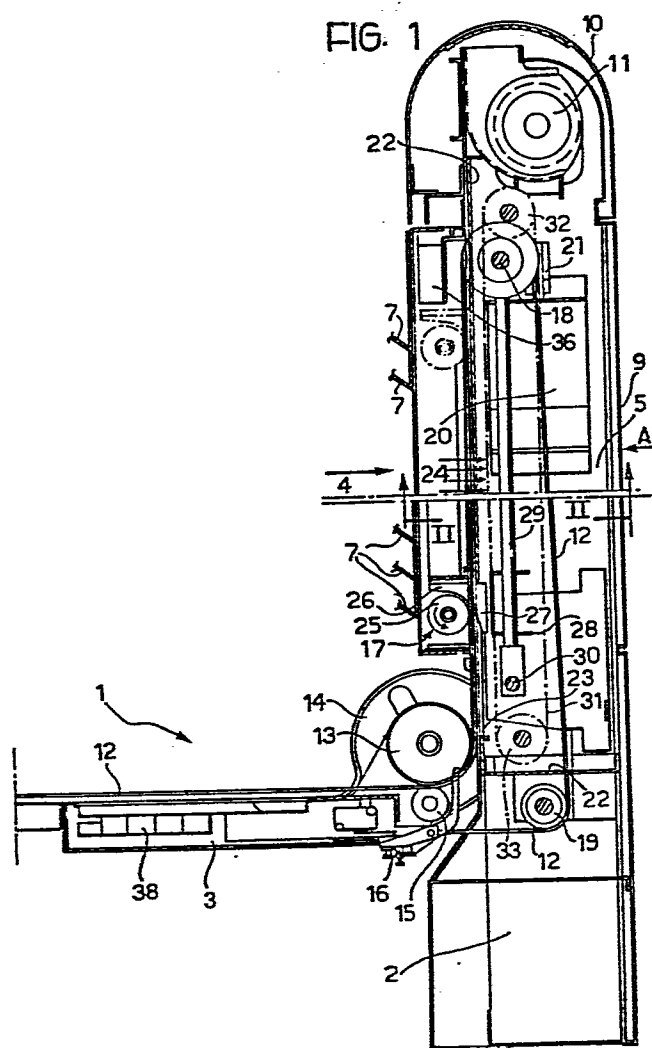
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(54) Sheet sorting and distribution apparatus.

(57) Improved apparatus (1) for the sorting and distribution of sheets, particularly those from a photocopying machine, is provided, having suction means (11) for holding the sheets in positions of adherence on drive belts (12) for moving the sheets during their translation up the vertical tract of the apparatus towards the individual reception compartments or trays (7).

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Apparatus for the sorting and distribution of sheets

The present invention relates to improved apparatus for the sorting and distribution of sheets, particularly for combination with photocopying machines in general.

5 When several copies of the same original are made in sequence, the need to separate and sort these copies automatically is known. Italian Utility Model application no. 22740-B/80 discloses apparatus for the automatic sorting and distribution of sheets coming in particular from a photocopying machine.

10 According to the teachings of this application, the problem of the bulk of the apparatus or the bulk of the operating zone for sorting of the sheets is resolved by the provision of a mainly vertical path for the sheets. The problem of keeping the sheets in adherence with the
15 means for translation along the vertical tract is solved essentially by exploiting the different frictional force between the conveyor belt and the steel guide members.

The object of the present invention is further to improve the apparatus of the type mentioned above, by a
20 general simplification of its structure with advantages of economy, bulk and maintenance, and the replacement of mechanical steel guide members by pneumatic adhesion of the sheets to the conveyor belts.

These and other objects are achieved by the improved
25 apparatus of the present invention, of the type comprising a casing having a plurality of superposed

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compartments or trays, and slidable belt means which cooperate with deflector means respectively to move the sheets in the casing and effect the controlled transfer of the sheets into the compartments, essentially
5 characterised in that suction means are provided for retaining the sheets on the slidable belt means.

According to further characteristics of the invention, the suction means are constituted by impellers located on the path of the sheets, the impellers creating a low
10 pressure which keeps the sheets flattened against the conveying surface of the belt.

To advantage, the apparatus of the invention has a plate mounted on the side of the belt opposite that carrying the sheets and having longitudinal slots for allowing
15 air to be sucked through the plate while simultaneously allowing the deflector means to slide "plough-like" on the plate.

These and other characteristics of the invention will become apparent from the description which follows with
20 reference to a preferred embodiment illustrated by way of non-limiting example in the appended drawings.

In these:

Figure 1 illustrates the apparatus of the invention in lateral section;

25 Figure 2 is a section of the apparatus of Figure 1 taken in the plane II-II of Figure 1; and

plant;

Fig.2 shows a partial frontal view, substantially taken on line II-II of Fig.1;

Fig.3 shows an end view, substantially taken on line III-III of Fig.1;

Fig.4 shows an enlarged and isolated plan view of the storing and feeding group;

Figs.5 and 6 show a side view from line V-V of Fig.4, and a section view substantially along the broken line VI-VI of Fig.4;

Figs.7 and 8 show enlarged details of Figs.1 and 2.

According to what is illustrated in the accompanying drawing and first referring to Figs.1 to 3, numeral 1 indicates individual vulcanizing machines of traditional type, mostly with molds having sectors 3, with a cover 5 being liftable by an arm 7 and with or without a vertical extractor to lift the tyre. The individual machines 1 are lined-up disposed and uniformly oriented to be served by a pick up and replacement plant capable of alternatively serving the various machines.

To this purpose, a back housing is provided, generally indicated with 10, which makes up - in the upper part - a conveyor 12, usually a roll conveyor, which is only partially shown and is intended for receiving the regenerated tyres to allow for their easy moving away.

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for driving the drive wheels 18, and hence the belts 12, through the reduction gear 21. Within the box-body 9, substantially between the low-pressure chamber 5 and the panel 6 for supporting the trays 7 (Figure 2), is mounted is a vertical abutment surface 22 constituted essentially by a sheet metal plate on which slide the sides of the belts 12 opposite those which move the sheets. The plate 22 has longitudinal slots 23 which allow air to be sucked through in the direction of the arrows 24 in Figure 1.

A plough-like deflector 17 for the sheets is slidably mounted on the plate 22. It consists essentially of a roller 25 hinged to a guide screen 26 for the sheets. The latter has, in particular, a plurality of projecting appendages 27 which slide "plough-like" in the slots 23. The deflector 17 is mounted on a carriage 28 guided on vertical rods 29 which are housed in the box-body 9 and are retained by a horizontal rod 30. the carriage 28 is connected to an endless chain 31 which engages sprockets 32, 33 the first of which is driven by a geared motor 34 (Figure 3) through the bevel gear pair 35.

In the pillar 4 can also be seen a photoelectric cell 36 (Figure 1) for controlling the ascent of the deflector, and a sensor 37 (Figure 3) for sensing the position of the deflector.

The sheets (not illustrated) carried across the feed plate 3 by the belts 12 pass in contact with the surface of the roller 13 and, when entering the ascending tract of the pillar 4, are retained by the suction of air

produced by the impellers 11 and are flattened against the belts 12 until they encounter the deflector 17 which, by the combined action of the ploughs 27 and the rotation of the roller 25, causes the sheet to be
5 detached from the belts and transferred into the tray 7 corresponding to the position of the deflector.

The programmed ascent of the latter is controlled by the photoelectric cell 36 enabled by the microswitch 16.

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CLAIMS

1. Improved apparatus (1) for the sorting and distribution of sheets, of the type comprising a casing (2, 3, 4) having a plurality of superposed compartments or trays (7), and slidable belt means (12) which
5 cooperate with deflector means (17) respectively to move the sheets in the casing and effect the controlled transfer thereof into the compartments (7), characterised in that suction means (11) are provided for retaining the sheets on the slidable belt means
10 (12).

2. Apparatus according to Claim 1, characterised in that the suction means are constituted by impellers (11) for creating a low-pressure chamber (5) in the casing, the low-pressure chamber (5) being provided on the side
15 of the slidable belt means (12) opposite that engaged by the surfaces of the sheets.

3. Apparatus according to Claim 2, characterised in that an abutment surface (22) is provided for the sheets, which defines the side of the low-pressure
20 chamber (5) facing the slidable belt means (12), the plate having slots (23) through which suction is applied to the sheets.

4. Apparatus according to the preceding claim, characterised in that the slots (23) are elongate in the
25 direction of sliding of the deflector means (17), suitable projections or appendages (27) of the latter being housed for "plough-like" sliding in the slots (23).

5. Apparatus according to Claim 1, characterised in that there are provided electric operating means (34) for the movable suction means of the apparatus, as well as switch and timer devices (16, 36) for controlling the
5 drive means.

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FIG. 1

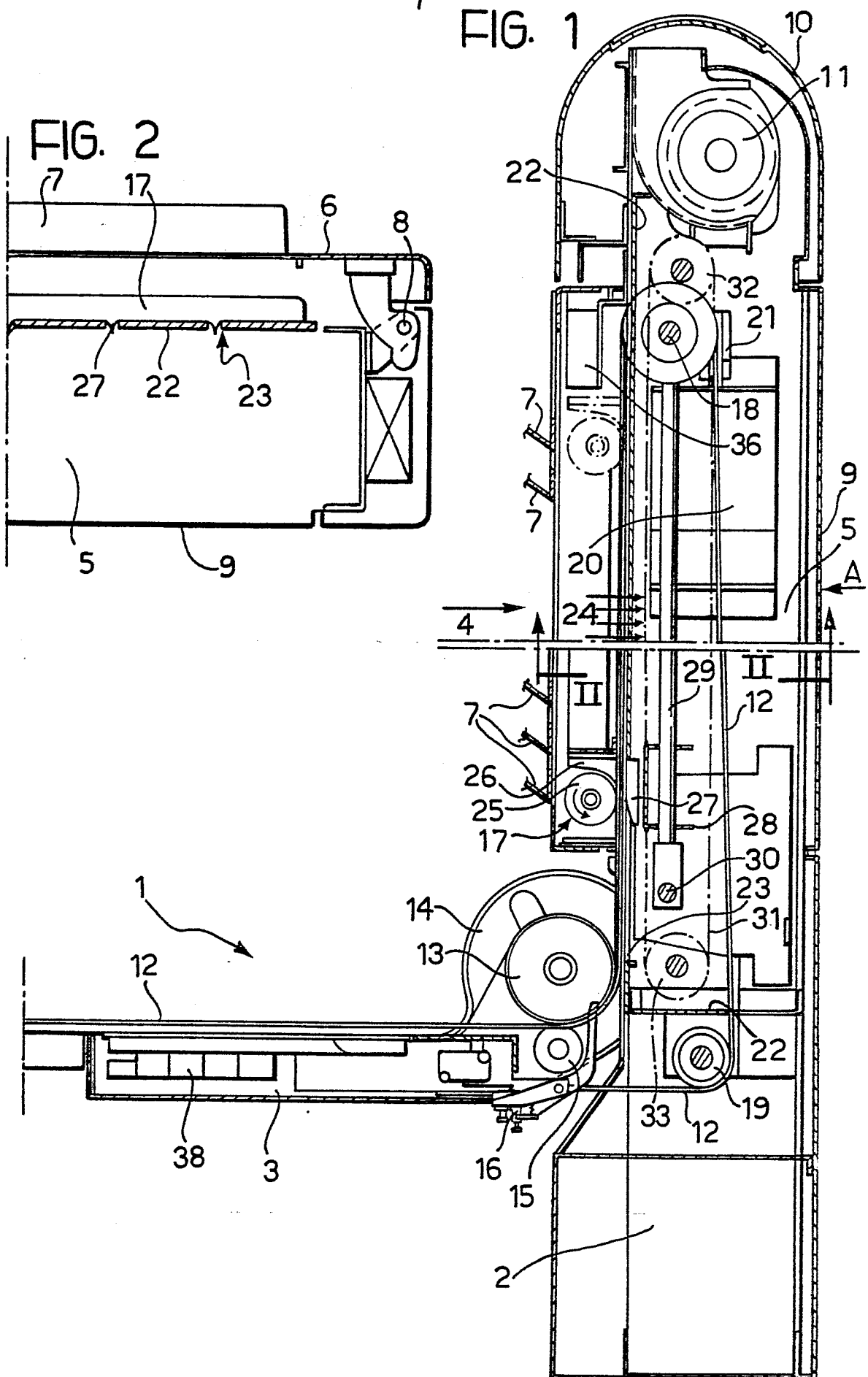


FIG. 3

