United States Patent

[11] 3,618,937

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[54] VACUUM CONVEYOR
3 Claims, 2 Drawing Figs.

[52] U.S. Cl. 271/74
[51] Int. Cl. B65h 29/32
[50] Field of Search 271/74, 12, 9

[56] References Cited
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ABSTRACT: A vacuum conveyor having a plenum chamber has a zigzag bottom with planar walls having openings which are normally closed by sheetlike main flaps. The leading edge of a sheet engages pilot valve flaps on the main flaps to first open the pilot valve flaps and then engages and opens the main flaps.

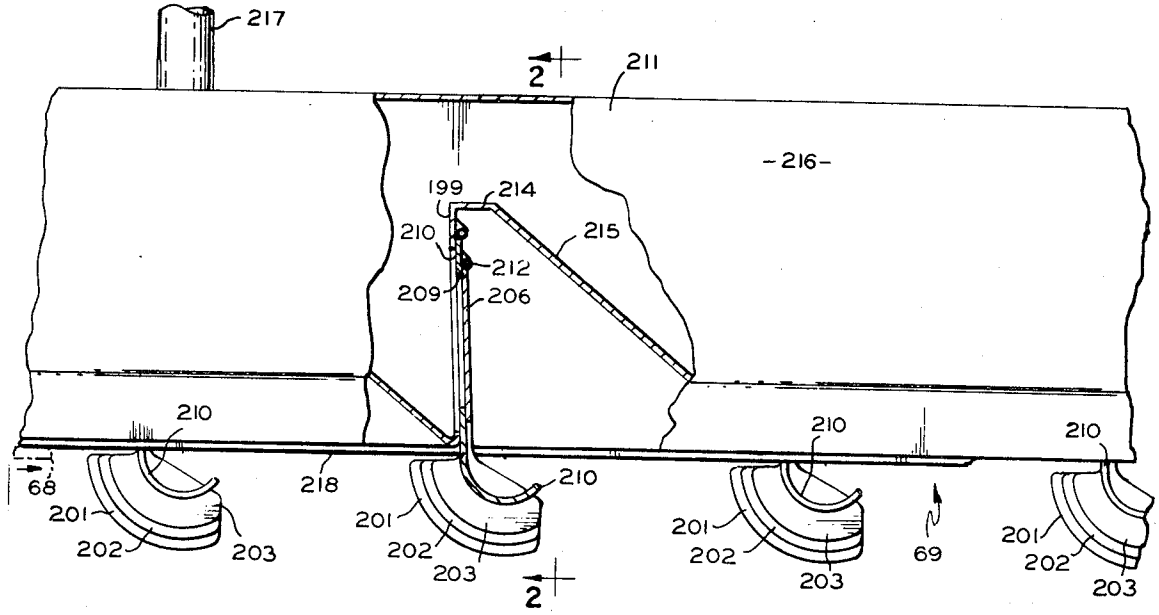


FIG. 1

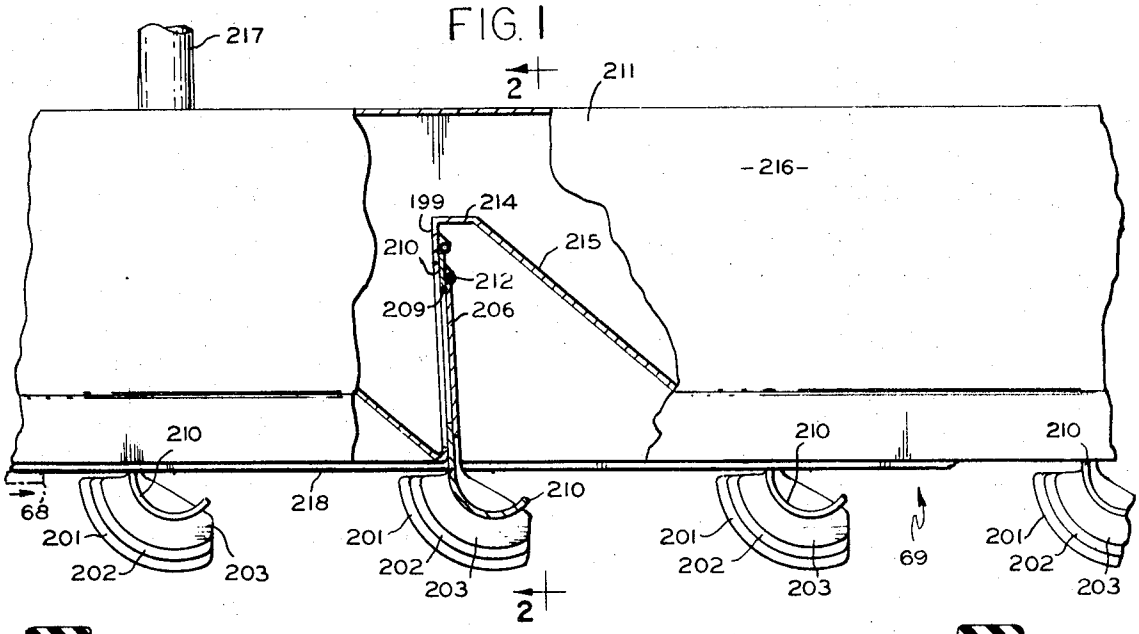
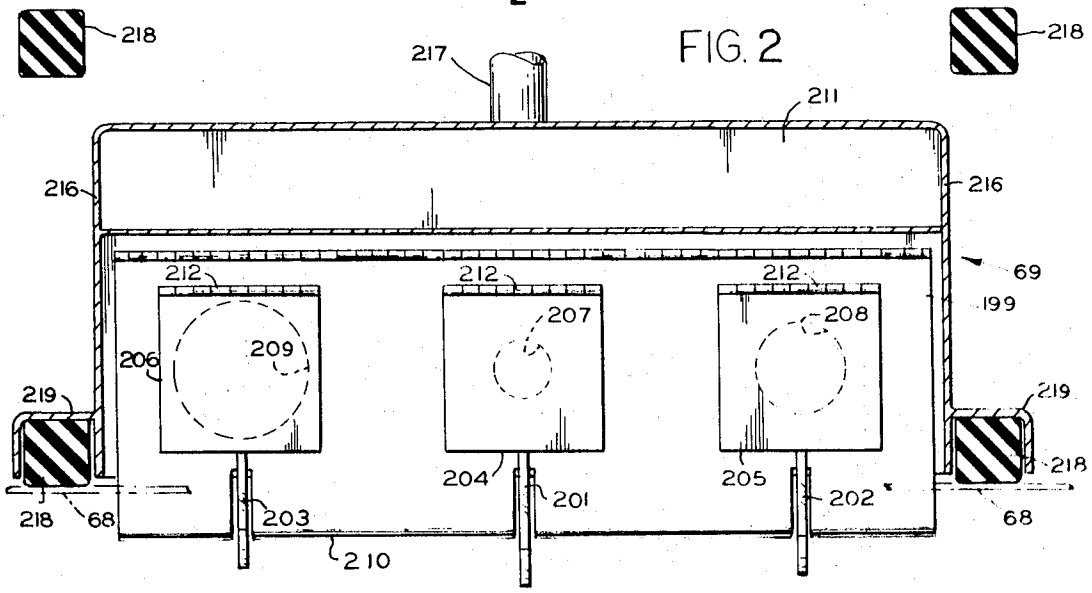


FIG. 2



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VACUUM CONVEYOR

DESCRIPTION

This invention relates to a vacuum conveyor, and more particularly to a sheet-handling vacuum conveyor. An object of the invention is to provide a new and improved vacuum conveyor.

Another object of the invention is to provide a sheet-handling vacuum conveyor.

In the drawings:

FIG. 1 is a fragmentary, vertical section view of a vacuum conveyor forming one embodiment of the invention; and

FIG. 2 is a fragmentary, vertical sectional view taken along line 2—2 of FIG. 1; Referring now in detail to the drawings, there is shown therein a vacuum conveyor forming one embodiment of the invention. In FIGS. 1, and 2 there is shown a vacuum conveyors 69 for receiving each sheet 68, and then dropping the sheet onto a stack of the sheets after the sheet has been positioned in vertical alignment with the stack. As the sheet is moved to the right, as viewed in FIG. 1 from a clipper, it engages actuators or feelers 201, 202 and 203 sequentially to swing pilot valve flaps 204, 205 and 206, which carry the actuators, sequentially away from pilot valve holes 207, 208 and 209 in a sloping, main valve flap 210 hinged to a wall 199 of a plenum chamber 211. The sheet then engages the main valve flap 210 and swings the flap to an open position. The pilot valve plates 204, 205 and 206 are mounted by hinges 212 on the main valve plate 210 which is hinged to the wall 199. The wall 199, the main valve flaps 210 and imperforate walls 214 and 215 form downwardly facing grooves closed at their ends by end walls 216. A conduit 217 leads to a source of vacuum. As each pilot valve hole 207, 208 and 209 is opened sequentially, the closure force of the vacuum in plenum chamber 211 on the main valve flap 210 is reduced in stages to permit the main valve flap 210 to be opened without excessive force and thereby apply full vacuum to the downwardly facing groove to hold the veneer sheet sealing against driven conveyor belts 218 coursing in sealing guides

219. Thus, as the sheet is advanced to each groove, vacuum is applied to the grooves to which the sheet has been advanced. When vacuum is momentarily cut off from the chamber 211, the sheet is dropped and the flaps 204, 205, 206 and 210 drop by gravity to their closed positions. As best shown in FIG. 1, the main valve flaps 210 and feelers 201, 202 and 203 slope slightly off vertical, and the actuating, lower end portions of the flaps 210 and the feelers are rounded and sloping. This permits the conveyor 69 to be used as a pickup device or vacuum pickup head, with or without the belts 218. When so used, the conveyor 69 is lowered vertically onto the sheet or article to be picked up, and engagement of the lower ends of the flaps and feelers by the sheet or article opens the pilot valves and the flaps to cause vacuum to be applied to the sheet or article which then is raised by the conveyor.

What is claimed is:

1. In a vacuum conveyor,
   - a plenum chamber having a pair of sidewalls and zigzag bottom wall means including a plurality of primarily vertical fixed planar walls having openings therein,
   - means for creating a vacuum in the chamber, a plurality of sheetlike flaps adapted to cover the openings,
   - and a plurality of hinge means suspending the flaps on horizontal axes pivotally between positions closing the openings and positions spaced away from the openings,
   - means for moving a sheet edgewise in a predetermined direction along the lower edges of the sidewalls, the flaps having actuator portions extending below the bottom wall means and engageable by the leading edge of the sheet and movable by the leading edge of the sheet to move the flaps away from the openings,

2. The vacuum conveyor means of claim 1 including pilot valve means carried by the flaps in positions covering pilot valve openings in the flaps and feeler means engageable by the sheet for openings the pilot valve means prior to engagement of the flap by the sheet.

3. The vacuum conveyor of claim 1 wherein the planar walls are substantially vertical.

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