

April 6, 1943.

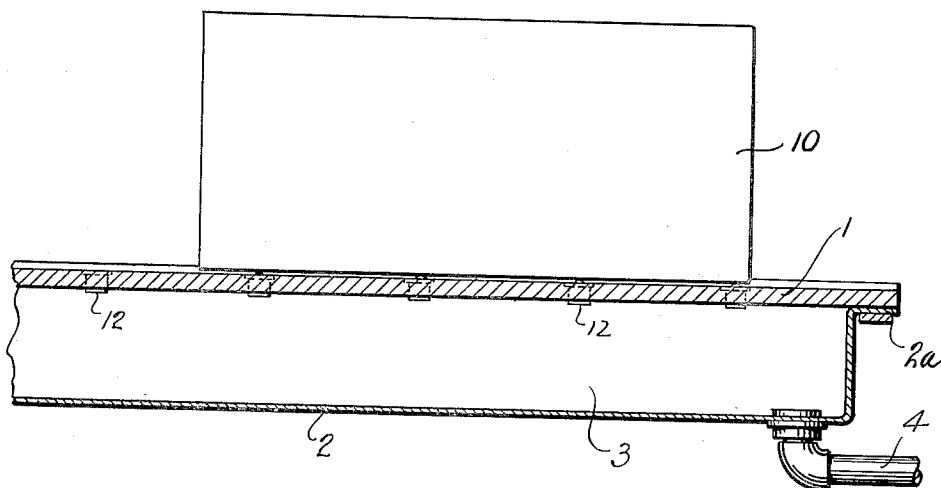
G. E. LAMB

2,315,627

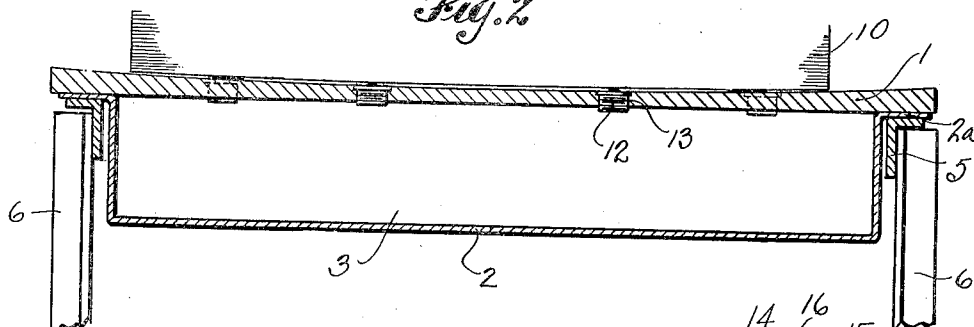
CONVEYER

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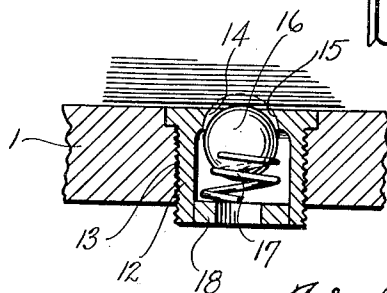
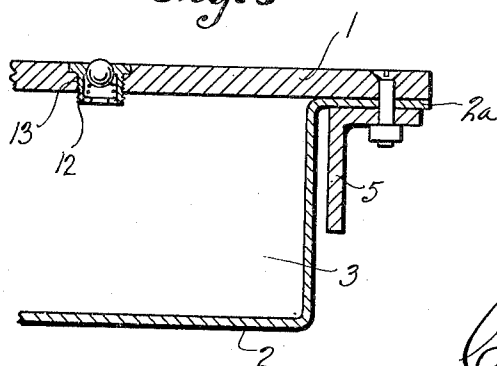
*Fig. 1*



*Fig. 2*



*Fig. 3*



*Fig. 4*

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## UNITED STATES PATENT OFFICE

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CONVEYER

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1 Claim. (Cl. 214—1)

This invention relates to conveyers and conveyer surfaces, and has reference more particularly to improvements in conveyers of the table types, having smooth top surfaces over which packages, bundles, bales, and the like, may be moved by sliding them along the said top surfaces, and wherein provision is made whereby air under pressure may be admitted against the under surfaces of the packages, or articles being moved, as an aid to easier movement and better control thereof.

More specifically stated, the present invention relates to improvements in conveyers, and conveyer tables and platforms of the above character, which utilize compressed air to aid in the conveyance of articles thereover, and wherein the tables are equipped at required intervals over their top surfaces with normally closed valves, adapted to be automatically opened by the contact of a bale or package in passing thereover, and to close as soon as disengaged by the moving package.

Explanatory to the present invention, it will here be stated that it is not considered new in the art to which this invention pertains, to use conveyer tables of the above stated character wherein the top surfaces are perfectly flat and equipped with open ports or with valved ports for the automatic release of air to aid in the conveyance of the package. However, to my knowledge, such tables have always been formed with top surfaces that are perfectly flat. I have discovered that in the use of such flat-topped conveyer tables, in pulp or paper mills where large heavy bundles of pulp or paper are to be moved, much air is wasted and a relatively high pressure is required to float the bales; this being due to the fact that the bale is not perfectly rigid, but has a certain flexibility that will permit the bottom surface to bow upwardly from the medial line of the bale toward its side edges, or from its medial point toward all side edges, thereby releasing the air and allowing the center portion of the bale to sag and drag on the table top.

In view of the above undesirable results, it has been the principal object of this invention to so design the conveyer surface as to overcome the excessive waste of air, and at the same time, provide for better floating support of the package or bale, with a lesser air pressure.

More specifically stated, the objects of the present invention reside in transversely troughing or concaving the table top to compensate for the natural warping or bowing of the bale

that allows the escape of supporting air, and to provide for effecting a better air seal about the periphery of the bale so as to better float the bale with less air pressure.

Other objects of the invention reside in the details of construction and combination of parts, and in their mode of operation, as will hereinafter be fully described.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawing, wherein—

Fig. 1 is a vertical section, taken longitudinally of a conveyer table embodying the present invention.

Fig. 2 is a cross sectional view of the table.

Fig. 3 is an enlarged detail of a part of the table, showing one of the valves as applied in the table top.

Fig. 4 is an enlarged, cross sectional view of one of the air valves.

Referring more in detail to the drawing—

1 designates the table top, or platform along which articles are to be conveyed, and 2 designates an air-tight housing or manifold that is fixed to the under side of the table top, and extends substantially to the full width and length thereof, thus forming an air chamber 3 which may be supplied with air under pressure from any suitable source, such, for example, as through the mediacy of the supply pipe designated at 4.

Preferably, the manifold is formed about its edges with a horizontal flange 2a which flatly engages the under side of the table top and which is held thereagainst in air-tight joints by underlying angle bars 5. Legs 6 are here shown as being attached to the bars to suitably support the table at a desired height.

Opening through the table top, at such spaced intervals as found desirable, are air passages, each passage being formed by a tubular valve housing 12, that is threaded into an opening 13 in the table top, with its upper end surface flush with the top surface of the table. At its upper end, the housing has an opening 14 surrounded by a valve seat 15, to which a ball valve 16 is fitted. Also, in each valve assembly, a coiled spring 17 bears upwardly against the ball valve to yieldably hold it in closed position; the spring resting at its lower end on a ring 18 that is fitted in the lower end of the housing.

When the ball valve is seated, it closes the passage, and in its closed position, it extends

slightly above the top surface of the table to an extent that permits it to be depressed by the passing of a bundle or bale thereover, and thereby to be unseated for the passage of compressed air from the chamber 3 into the space directly beneath the bundle.

It is to be understood that packages, bundles or bales of material, such as paper or pulp, one of which is designated at 10, are of somewhat flexible nature, as differentiated from the rigidity of stacked metal plates, and when conveyed in this manner on air, will bow slightly upwardly from the center toward the edges, allowing air to escape and thus requiring a much higher pressure than when the peripheral surfaces remain in close contact with the table. Therefore, the object of this invention has been to overcome this loss of air, and it has been accomplished by the transverse concaving, or troughing of the table top surface. The extent to which this concaving or troughing is carried out, is dependent to some extent upon the character and size of the packages being moved and the width of the conveyer top.

In the present instance, where the conveyer is designed for the moving of bundles of paper or pulp, and has a transverse width of approximately 32 inches to accommodate bales of from 18 to 28 inches in width, the top surface is downwardly curved to place it approximately  $\frac{3}{1000}$  of an inch lower along the medial line than at the edges. The air pressure used in this case for 400-pound bales of pulp, is approximately three pounds per square inch.

It has been very satisfactorily demonstrated that by so curving or concaving the table top, a

very material saving in air is effected, and less air pressure is required to float the bale. Variations can be made to suit various kinds of bales and for use of different pressures.

Such construction may be applied to conveyers for various uses, and it is not intended that the present claim shall be restricted in any way to the kind of materials or packages being handled or to the size of conveyer or air pressure employed. It is considered that the gist of the invention resides in the concaving, as an aid to this method of conveyance.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent is:

In a conveyer for bales of material of the character described; a table having a superficiality upon which the bales are to be conveyed; said superficiality being smooth, at least as wide as the bales, and formed with air ports therethrough that are spaced at such intervals that a plurality thereof, both in the longitudinal direction and in the transverse direction of the superficiality will be covered simultaneously by a bale in its conveyance along the table, and means for supplying air under pressure to the ports for upward discharge therethrough; said superficiality being transversely concaved to an extent corresponding substantially to the natural sag of the bottom surface of a bale when it is held in suspension by the pressure of air between the bale and superficiality being discharged upwardly through said ports.

GEORGE E. LAMB.