United States Patent

Rush et al.

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[54] **VACUUM TANK CONSTRUCTION**

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[52] **U.S. Cl.** **220/83**, 226/97, 242/182

[51] **Int. Cl.** **B65h 17/32**

[58] **Field of Search**..220/82 R, 83; 226/97; 242/182, 242/183, 184, 185

[56] **References Cited**

UNITED STATES PATENTS

2,997,246	8/1961	Pendleton	242/182 X
3,057,569	10/1962	Weidenhammer	242/185
3,217,995	11/1965	Sweeney	242/185
3,254,854	6/1966	Deighton et al	241/182 X

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[57] **ABSTRACT**

An improved vacuum column construction for a computer tape drive has a thin, flat, sheet held in a plane by side rails secured to the sheet on one side bracing members on the other side arranged at an angle to the rails and fastened to the rails through the sheet.

2 Claims, 5 Drawing Figures

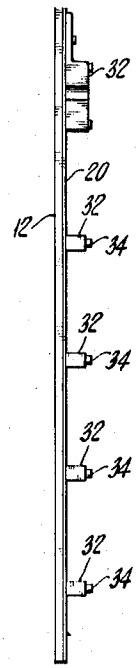

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Fig. 1.

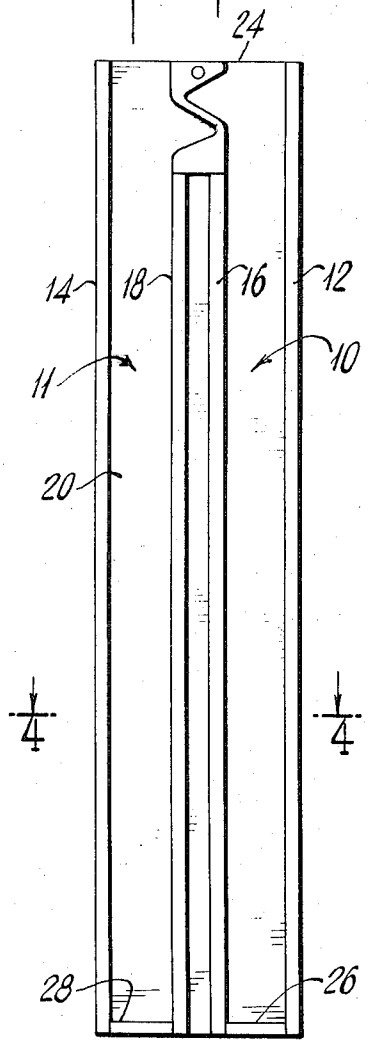

Fig. 2.

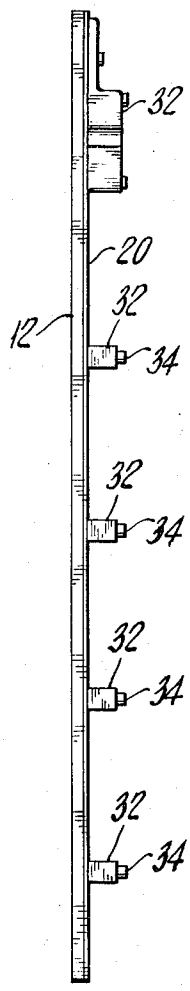

Fig. 3.

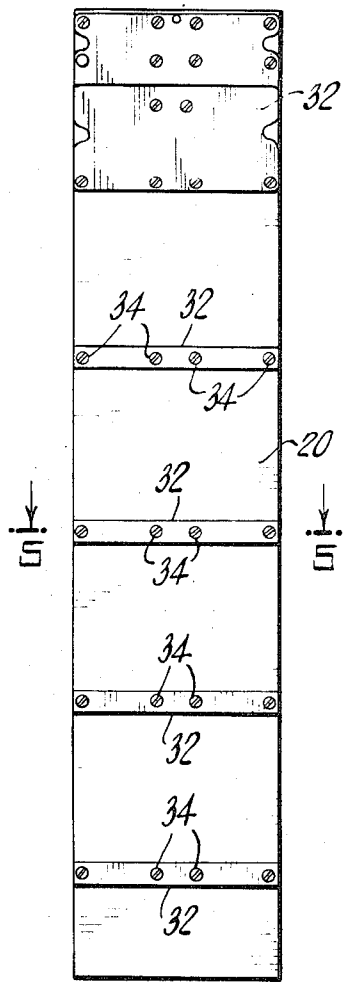

Fig. 4.

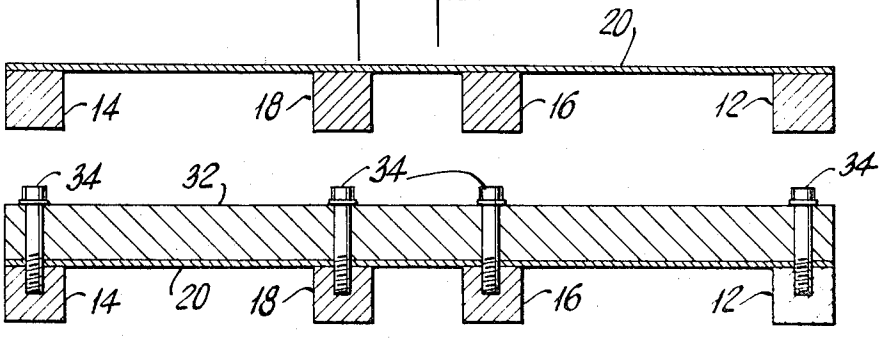

Fig. 5.

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VACUUM TANK CONSTRUCTION

BACKGROUND AND SUMMARY

The field of the present invention is magnetic tape drives employing vacuum buffer columns and more particularly an improved and economical construction for the vacuum columns.

In a computer tape drive of the type with which this invention is concerned, vacuum columns form loops of tape which allow the tape to be started and stopped rapidly despite the relatively large inertia of the tape reels. In high speed tape drives, the tanks are about three feet long or longer in order to form a tape loop sufficiently long to allow rapid acceleration of the tape at the transducing head despite high inertia of the reels.

The clearances between edges of the tape and the front and rear walls of the vacuum column are necessarily very small to prevent excessive leakage of air. Consequently, the rear wall must be extremely planar throughout its entire length and width.

Construction of long vacuum tanks in the prior art required either large precisely machined pieces or large extrusions, both of which are quite expensive. An object of this invention is to reduce the cost of manufacturing vacuum columns for high performance magnetic tape transports.

Briefly, the instant invention, in accordance with one aspect thereof, the vacuum column comprises a thin, flexible sheet of stainless steel or other suitable non-magnetic material which forms the rear wall of the column. A pair of longitudinally extending straight side rails secured to one side of the sheet serve as the side walls of the vacuum columns. Transverse rails secured to the other side of the sheet serve in combination with the side rails to clamp the sheet in a plane thus forming the vacuum column. The front of the vacuum column can be formed by a glass door if desired as in prior art constructions.

THE DRAWINGS

Having briefly described this invention, it will be described in greater detail along with other objects and advantages in the following detailed description of a preferred embodiment which may be best understood by reference to the accompanying drawings. These drawings form part of the instant specification and are to be read in conjunction therewith. Like reference numerals are used to indicate like parts in the various views;

FIG. 1 is a front plan view of a pair of vacuum columns constructed according to the instant invention;

FIG. 2 is a side elevation of the vacuum columns of FIG. 1;

FIG. 3 is a rear elevation view of the vacuum columns of FIG. 1;

FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 1; and

FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 3.

The FIGURES are to be understood to be more or less of a diagrammatic character for purposes of illustration. Like numerals represent like elements in the several views.

DESCRIPTION OF THE INVENTION

Referring to FIGS. 1, 2, and 4, in a preferred embodiment shown in the drawings and described herein, a pair of vacuum columns generally designated by reference numerals 10 and 11 are formed with a common rear wall. An outer rail 12 and an inner rail 16 secured to a thin, smooth, flat sheet 20 of non-magnetic material such as stainless steel or aluminum, for example, form column 10. Similarly, an outer rail 14 and inner rail 18 also secured to sheet 20 form column 11. The sheet 20 is preferably about one-sixteenth of an inch thick. The tops 24 of the vacuum columns are open and a pair of blocks 26 and 28 form the bottoms of the columns 10 and 11 respectively. A glass door (not shown) may be used to form the front wall of the column as in the prior art constructions.

Referring now to FIGS. 2, 3, and 5, a plurality of machine screws 34 secure transverse braces 32 to the other side of the sheet 20. The machine screws 34, which pass through holes in the sheet 20, threadly engage the rails 12, 14, 16 and 18, firmly clamping the panel 20 between rails and braces 32. As the rails and braces are quite straight, the sheet 22 is thusly constrained so that its surface lies in a plane. It should be noted that holes for the machine screws 34 and for sensors (not shown) can be punched in the sheet 20, thus further reducing the cost of the completely assembled column.

Positioning of the supporting cross members may be varied and will depend generally on the suppleness of the particular panel used. The preferred disposition of the cross members is at right angles to the rails.

Although the present invention has been described with reference to a specific embodiment, it will be appreciated that a variety of changes may be made without departing from the scope of the invention. For example, certain features may be used independently and equivalents may be substituted.

What is claimed is:

1. An elongated vacuum column for a magnetic tape transport comprising:
   - a thin, flexible plate forming the rear wall of said column,
   - a pair of spaced, longitudinal rails on said plate on one side thereof forming the respective sidewalls of said columns,
   - a plurality of braces on the other side of said plate and transversely disposed with respect to said rails, and
   - means securing said braces to said rails whereby said plate is clamped between said rails and said braces with the surface thereof in a plane.

2. An elongated vacuum column for a magnetic tape transport as in claim 1 further including a second pair of rails on said one side of said plate forming the respective side walls of a second vacuum column, and means securing said second pair of side rails to said braces.

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