Dec. 2, 1969 D. B. LANDERS 3,481,656

STORAGE TRAY FOR FLAT ARTICLES

Filed Nov. 9, 1967

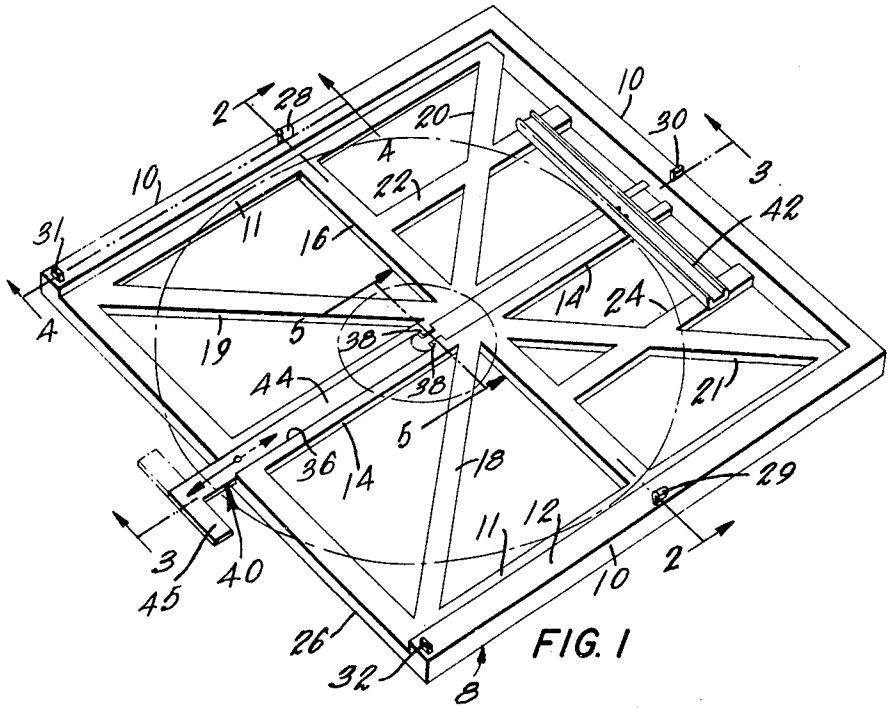


FIG. 1

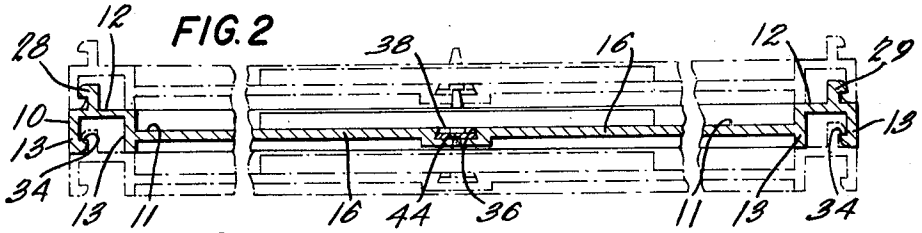


FIG. 2

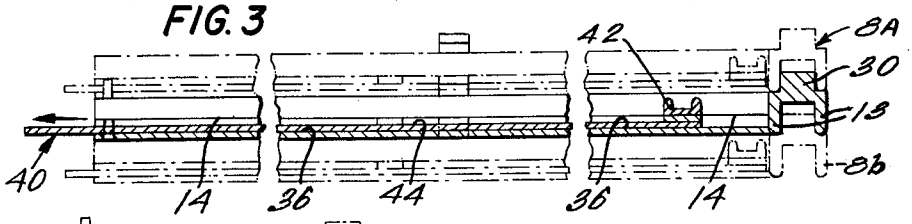


FIG. 3

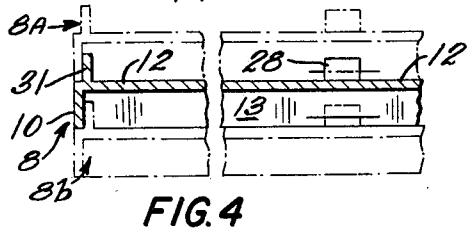


FIG. 4

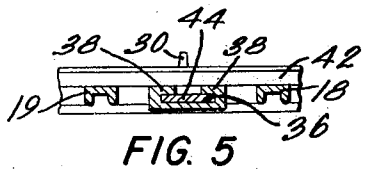


FIG. 5

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STORAGE TRAY FOR FLAT ARTICLES

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U.S. Cl. 312—18 3 Claims

ABSTRACT OF THE DISCLOSURE

The storage tray can be stacked and has a central flat platform, an upstanding rim on three sides thereof. Flat articles can be entered through the open side and there is a retrieving arm in each tray for retrieving the flat article when it is required.

The present invention relates to a tray for storing flat articles and more particularly to a tray which is adapted to be stacked with a plurality of like trays.

Certain flat articles, such as phonograph records, are, in most storing devices, stored in an upright position. In such a position, these records have a tendency to warp since they are not supported throughout their whole area and they are subjected to lateral forces, for instance, while they are being selected.

It is an aim of the present invention to provide a storage tray for such flat articles as phonograph records, which stores the article in a horizontal position whereby it can be fully supported. It is also an aim of the present invention to provide a storage tray which is simple in construction, takes up relatively little more space than the article to be stored therein and is a modular unit which can be stacked on top of like trays, whereby only one record is stored in each tray.

A construction in accordance with the present invention comprises a planar supporting surface, a rim bordering the planar supporting surface on all but an open side thereof, the rim having a stacking surface spaced above the planar supporting surface whereby it is adapted to support a matching tray, locking means provided on the rim for locking engagement with a matching tray, whereby the tray is adapted to receive a predetermined flat article on the supporting surface below the matching tray.

In a more specific construction, the storage tray is provided with an article retrieving means. The article retrieving means comprising a retrieving arm extending outward of the open side of the tray and an abutting member connected to said retrieving arm and suitable for abutting a flat article from the side opposite the open side.

Having thus generally described the invention, it will be referred to in more detail by reference to the accompanying drawings illustrating a preferred embodiment and in which:

FIGURE 1 is a perspective view of a preferred embodiment of the storage tray;

FIGURE 2 is a vertical cross section taken along line 2—2 in FIGURE 1, and also showing similar trays, in dotted lines, in a stacked position;

FIGURE 3 is a vertical cross section taken along line 3—3 of FIGURE 1 and also showing, in dotted lines, similar trays stacked therewith;

FIGURE 4 is a vertical cross section taken along line 4—4 of FIGURE 1 and also shown in relation to similar stacked trays, shown in dotted lines, and

FIGURE 5 is a vertical cross section taken along line 5—5 of FIGURE 1.

Referring now to FIGURE 1, the tray is indicated generally by the numeral **8**. Tray **8**, shown in FIGURE 1,

is of generally rectangular shape and includes a downwardly extending channel **10** surrounding three sides thereof. The channel **10** includes at least on two opposed sides of the tray, a shoulder **11** which is approximately midway of a flange **13** of the channel **10**. The channel **10** is also provided with a top stacking surface **12**.

Within the bounds of the channel **10** is a planar supporting surface formed by the shoulders **11** and flat cross members **14** and **16**. Further members such as diagonal members **18**, **19**, **20** and **21** and short, flat, parallel members **22** are also provided in order to strengthen the supporting surface. The top flat surfaces of all of the above-mentioned members are in the same plane as the surface of the shoulders **11**.

At the open end or front end of the tray, a front member **26** extends between the ends of the channel **10**. The top surface of the flat member **26** is also in the same plane as surfaces of the shoulders **11**.

Upstanding catches **28**, **29**, **30**, **31**, and **32** are distributed on the top surface **12** of the channel **10** in order to lock and engage a tray **8***a*, stacked above tray **8**, as shown in FIGURES 2 and 3 in dotted lines. The upstanding catches **28** and **29** are slightly indented in order to engage coincident lips **34** provided on a channel flange **13**. The straight catch members **30**, **31** and **32** engage the inner walls of the flanges **13** of the channel **10** on the three sides of the tray **8** and prevent it from any sideways movement.

The cross member **14** is recessed to provide a guide slot **36** as shown in FIGURES 1, 2, 3 and 5. The guide slot **36** extends throughout the whole length of the cross member **34** and is adapted to receive the T-shape retrieving member **40**. This retrieving member includes a longitudinal member **34** which travels in the guide slot **36** and a lateral T-member **42** which is mounted at one end of the longitudinal member **44** with a spacer therebetween. The lateral member **42** is meant to travel over the plane of the supporting surfaces formed by the members **11** and **14** to **26**, for instance, while the longitudinal member **34** is meant to travel in the guide slot **36** so that its top surface is below the abovementioned supporting surface. The retrieving member **40** is also provided with a handle **45**.

The tray **8**, which in this case is adapted to store a "long playing" phonograph record, and the T-shape retrieving member **40** are adapted to be made from a suitable plastic material and to be die cast. As mentioned above, the trays are meant to be stacked one above the other and as they are being stacked the catches **28** and **29** engage the corresponding lips **34** of the flanges **13** on either side of the tray being stacked, **8***a*, as shown in FIGURE 2. Catches **30**, **31** and **32** also engage the inner walls of the flanges **13** of channel **10** to prevent the stacked trays from any sideways movement.

The height from the supporting surface determined by the shoulders **11** and the top surface of the members **14** through **26** to the bottom of the similar members of the tray **8***a* shown in dotted lines is slightly higher than the thickness of the average long playing record. Of course, the width and length dimensions of the tray between flanges **13** above the shoulders **11** is also slightly larger than the records to be stored. While stacking a number of these trays **8**, each alternate tray **8***a* should have a retrieving member **40** with a handle **45** in the opposite direction as shown in dotted lines in FIGURE 1.

In operation, the record is set on the supporting surface determined by the shoulders **11** and the members **14** through **26**. In a stored position, the retrieving member **40** is in a position whereby the lateral member **42** abuts against the flange **13** of the channel **10** of the opposite side. When it is required to choose one of the records from any one tray, the proper handle **45** is pulled towards

the operator and the lateral member **42** which rides above the supporting surface abuts the end of the record as shown in FIGURE 1 and as handle **45** is pulled towards the operator, the record moves out of the tray. The lateral member **42** moves forward until it abuts against the stops **38** which prevent it from moving any further. However, the record at this point is half way out and is easily accessible.

I claim:

1. A storage tray suitable for receiving flat articles comprising of planar supporting surface for supporting a predetermined flat article, a rim bordering the planar supporting surface, the rim defining an opening at least the width of the predetermined flat article, the rim also having a stacking surface spaced above the planar supporting surface whereby it is adapted to support an identical tray, and locking means provided on the rim for locking an identical tray in a stacked position; an elongated guide slot defined in the planar supporting surface and extending from said opening defined by the rim, an elongated flat arm adapted to slide in said slot below said planar supporting surface, the arm mounting an abutting arm at one end of the sliding arm whereby said abutting arm is above the planar supporting surface and is adapted to engage and retrieve a stored flat article when said flat arm is moved in the direction of the opening.

2. A plurality of stacking trays as defined in claim **1** wherein the rim is rectangular in cross section and is in the form of a downwardly extending channel.

3. A plurality of stacking trays for storing flat articles, each tray comprising of a rectangular supporting surface

for supporting the flat articles, a rim surrounding three sides of the surface, the rim having upper and lower parallel supporting surfaces, when the upper surface is spaced above the article supporting surface and the lower surface is spaced below the article supporting surface; the lower supporting surface of one rim of each tray abutting on the upper supporting surface of the rim of the lower adjacent tray and locking means for temporarily locking the rim of one tray to the rim of the adjacent tray; each tray comprising at least one flat member extending between the rims defining said article supporting surface and an elongated guide slot defined in said flat member and extending from said open side, an elongated flat arm adapted to slide in said slot below said article supporting surface, the arm mounting an abutting arm at one end of the sliding arm whereby said abutting arm is above the article supporting surface and is adapted to engage and retrieve a stored flat article when said flat arm is moved in the direction of the open side.

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J. L. KOHNEN, Assistant Examiner

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3481656 Dated December 2, 1969

Inventor(s) David B. Landers

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

STORAGE TRAY FOR FLAT ARTICLES

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SIGNED AND
SEALED
AUG 25 1970

(SEAL)
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Commissioner of Patents