Nov. 14, 1967 J. D. LEAR ETAL 3,352,302

FILING TRAY

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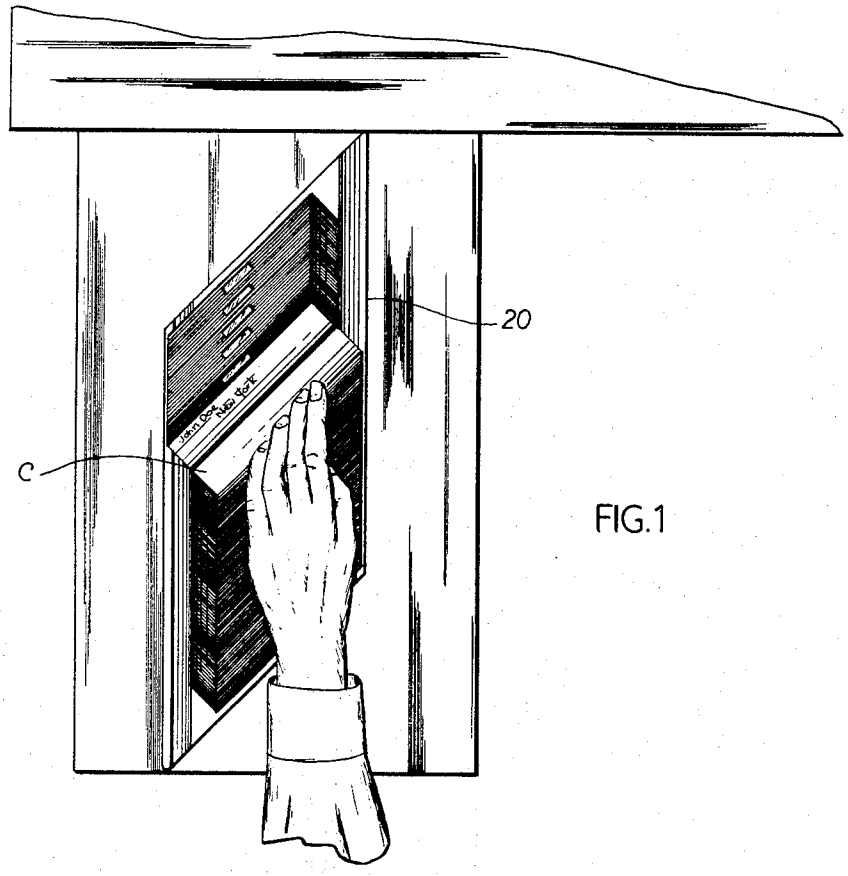


FIG.1

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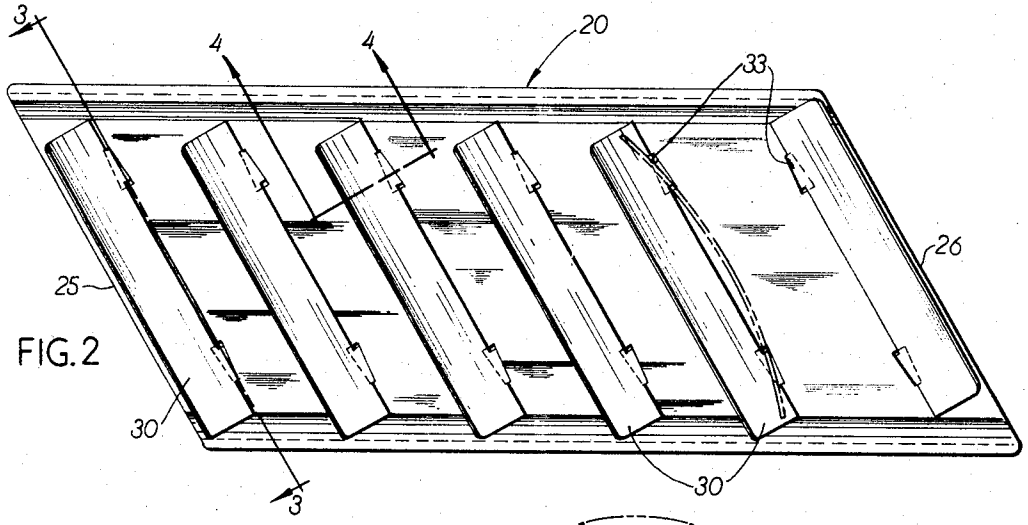


FIG. 2

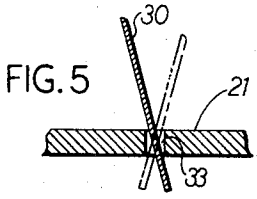


FIG. 5

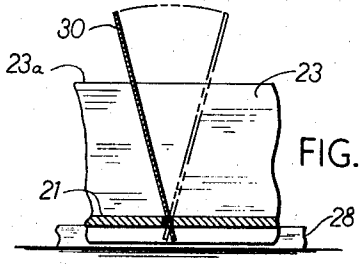


FIG. 4

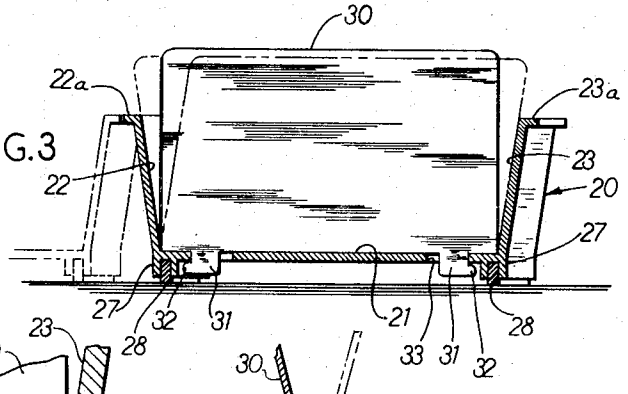


FIG. 3

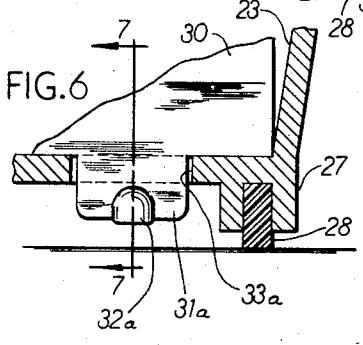


FIG. 6

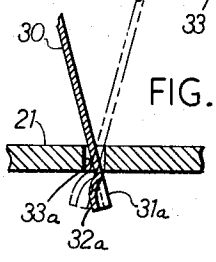


FIG. 7

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FIG. 8

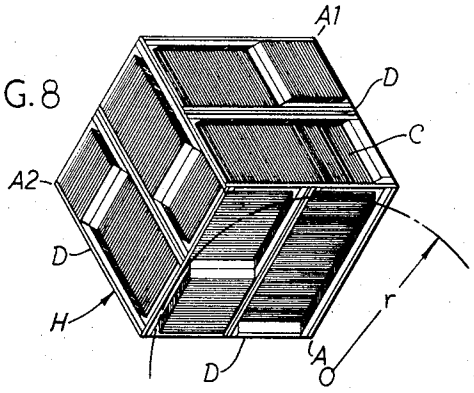


FIG. 10

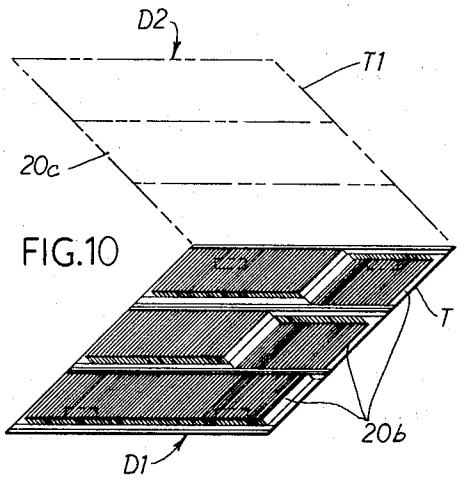


FIG. 9

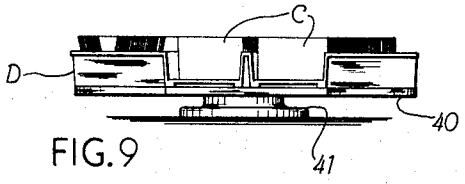


FIG. 11

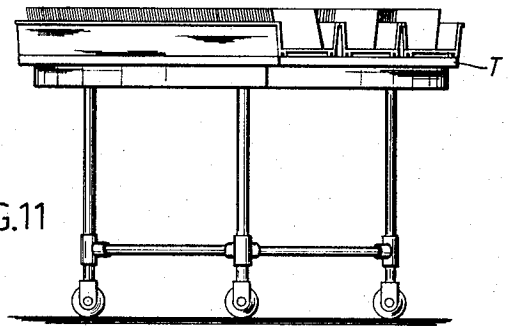
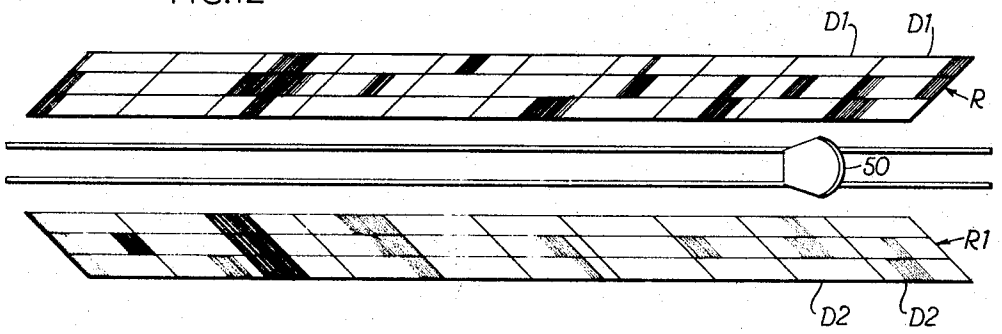


FIG. 12



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3,352,302

FILING TRAY

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Filed May 17, 1965, Ser. No. 456,256
2 Claims. (Cl. 129—16)

This invention relates to improvements in card filing trays.

It is an object of the invention to provide a filing tray wherein the cards are disposed in an ideal position to the user, for both optical and physical reference. This is accomplished by constructing a filing tray with means to receive and to support cards angularly with reference to the sides of the tray so that, in effect, the operator views a body of cards as a parallelogram from the best vantage point of observation and use.

It is a further object of the invention to proportion the filing tray in a novel manner so that when the trays are used in groups the same advantages accrue, and, additionally, pure geometric group arrangements result which are greatly desirable in numerous types of filing units both from space and labor saving considerations.

These and other objects of the invention are more specifically set forth in the accompanying specification and drawing wherein:

FIG. 1 is a top view of the tray of the invention as used on a desk shelf.

FIG. 2 is an enlarged view of a similar tray with the cards removed to show the spacer structure.

FIG. 3 is a section on the line 3—3 of FIG. 2.

FIG. 4 is a section on the line 4—4 of FIG. 2.

FIG. 5 is an enlargement of a portion of FIG. 4.

FIG. 6 is an enlarged fragmentary sectional view similar to FIGURE 3 showing different spacer structure.

FIG. 7 is a fragmentary section on the line 7—7 of FIG. 6.

FIG. 8 is a top view of a rotary index unit containing six trays of the type shown in FIG. 1.

FIG. 9 is a side elevation of FIG. 8.

FIG. 10 is a top view of three trays of different angular disposal mounted on a table unit with an adjoining table unit shown in dot-dash lines.

FIG. 11 is a side elevation of the table unit of FIG. 10.

FIG. 12 is a diagrammatic top view of trays of the type of FIG. 10 disposed in parallel spaced rows.

Referring to FIGS. 2 and 3 it will be seen that the tray **20** is advantageously an integral structure, such as might be provided by an aluminium extrusion, having a flat bottom **21** and slightly angular sides **22** and **23**. The sides **22** and **23** terminate in short horizontal spacing flanges **22***a* and **23***a* which serve to abut other tray flanges when trays are disposed in side-by-side relation (dot and dash lines FIG. 3). The ends **25** and **26** of the tray **20** are parallel and cut angularly so that the acute angles are 60° to the sides **22** and **23** of the tray in this embodiment of the invention (FIG. 2). The bottom is spaced from the desk top or other supporting surface by marginal channel formation **27** which receives plastic inserts **28** for protecting the top against abrasion.

Rectangular card spacers **30** are disposed at regular intervals within the tray **20** in parallelism to the ends **25** and **26** and they are preferably formed of a flexible material such as hard rolled steel. Lugs **31** project from the bottom of each spacer **30** and each lug is formed with an outwardly projecting offset or hook portion **32**. Spaced pairs of slots **33** are pierced in the tray bottom **21** in parallelism to the ends **25** and **26**. It will be seen in FIG. 2 that each slot **33** is slightly tapered toward the adjoining sides of the tray so that the spacer **30** may be bent (dot and dash lines, FIG. 2) to permit entry of the lugs **31** in a

pair of slots **33**, and then released to permit the hook portions **32** to engage the lower surface of the tray bottom **21**. The slots are so proportional in thickness and width that a limited rocking or wobbling movement of approximately 15° is permitted in each direction from the vertical (FIGS. 4 and 5).

Groups of cards C are disposed loosely between the spacers **30** so that adjacent cards may be spread at any desired point of cleavage C (FIG. 1) to disclose a particular card at an angle to the eyes of the operator. During such operations the spacers fully support the card masses and retain the cards in parallel order. It will be noted that any tendency of the spacers **30** to creep out of the slots **33** during their angular movement is prevented by the locking effect of the hook portion **32**.

Another form of the lug structure is shown in FIGS. 6 and 7 wherein the lugs **31***a* are provided with terminal bosses **32***a* instead of the hook portions **32** of the described embodiment. In this case the spacers **30***a* need not be sprung, but are vertically inserted in the slots **33***a*, which permits close clearance of the bosses **32***a* upon such vertical insertion. It will be seen however, that in their natural angular position (FIG. 7), the spacers are irremovable, since the bosses **32***a* act as stop means.

An important physical advantage of the described structure lies in the support afforded to the spacers **30** by the sides of the sides of the tray, where under heavy load conditions, the spacers rest against one side of the tray, and thus, the load of a card body is not concentrated on an end spacer but rather is distributed with fair uniformity along a side of the tray. It will be seen that the angle of the tray sides is such that the spacers are roughly parallel thereto when inclined.

When used as a single reference file as in FIG. 1, the proportions of the tray (i.e. the length of the tray with respect to the width of the diagonal front) is relatively unimportant, however, when used in multiple, such proportions become highly significant in many adaptations. It is proposed that the length of the tray be a multiple of the diagonal width, so that in the case of FIG. 2 where the ratio is 2 to 1, two identical trays may be placed side by side to form a diamond D having equal sides and having opposed acute angles of 60°, this is best shown in FIG. 8 where pairs of trays **20** form three diamonds D, which are arranged to present a regular hexagon or reference unit H. The unit H is mounted on a similarly shaped table **40** which in turn is supported for rotary movement on a centrally located bearing pedestal **41**. The rotary index thus formed, has three optimum viewing points indicated at A, A1, and A2 (FIG. 8) where full accessibility to a complete diamond D is available. For example an operator, seated at O, with station A rotated to the relative position shown, has a radius R of arm movement which encompasses the entire diamond. Visually, all of the cards C in such diamond are viewed from an angle as previously described.

It is not intended to limit the invention to the 60° arrangement of FIGS. 1 to 8 nor to the number of trays in a diamond. For example in FIGS. 10 and 11 the acute angles of the trays **20***b* are 45° and three trays are arranged to form a diamond D1. It will be obvious that in this case the length to diagonal width ratio is 3 to 1 so that a perfect diamond is presented. For examplary purposes the diamond D1 is shown mounted on a diamond shaped table T to form a maneuverable device which may be arranged with a second unit table T1 (dot and dash lines) to form an index which may be positioned in a 90° corner. The second table T1 may carry trays **20***c* which are identical to the trays **20***b* except that they are of opposite hand thus forming a left handed diamond D2.

In large index systems, the general arrangement shown

in FIG. 12 is familiar to those skilled in the art, where it consists of two spaced rows R and R1 of files between which an operator moves on a track mounted chair 50. In using the present trays in such a system, the 45° type of FIGS. 10 and 11 prove most advantageous for reference to the operator. It will be seen that the upper row R consists of diamond D1 disposed in parallelism while the lower row R1 is composed of left hand diamonds D2 similarly arranged.

It will be obvious that the invention is susceptible to numerous other variants without departing from the scope of the invention as set forth in the appended claims wherein we claim:

1. An index device comprising a tray structure having a relatively flat parallelogrammic base with opposing sides extending upwardly from said base, said sides each forming an obtuse angle with said base, the extremities of said tray structure each being cut at an angle relative to said sides and perpendicular to said base to form open ends, said extremities being parallel to each other, a plurality of thin rectangular spacers arranged in spaced parallel relation to each other on said base and in parallelism to said angular extremities of the tray, said spacers extending from side to side of said tray on said base, means mounting each spacer on said base for limited pivotal movement relative to the vertical, and groups of rectangular cards disposed between pairs of spacers, said cards being of substantially the same width as said spacers and being guidably supported by said spacers for pivotal movement on said tray base, said cards contacting the sides of the tray for additional support when in extreme angular positions.

2. An index device comprising a tray structure having

a flat base with two parallel margins, opposing sides extending upwardly from said margins of the base, said sides each forming an obtuse angle with base, a plurality of thin rectangular spacers all arranged in spaced parallel relation to each other and in angular relation to the margin of said base, means for mounting each spacer on said base for limited pivotal movement relative to the vertical, and groups of rectangular cards disposed between pairs of spacers and extending from side to side of said tray on the base thereof for pivotal movement on said tray base under guidance of said spacers, said cards contacting the obtuse sides of the tray for additional support in extreme angular positions.

References Cited

UNITED STATES PATENTS

875,829	1/1908	La Rue	129—16
2,012,035	8/1935	Clark	129—16
2,153,123	4/1939	Ruck	129—16
2,249,549	7/1941	Swimmer	129—16
2,493,538	1/1950	Karns	129—16
2,599,802	6/1952	Yzetta	129—16
2,974,803	3/1961	Humphrey	129—16

FOREIGN PATENTS

945,291	4/1947	France.
947,140	1/1949	France.
1,062,217	7/1959	Germany.
431,453	3/1948	Italy.
134,195	1/1952	Sweden.

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