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ROTARY CARD FILING DEVICE

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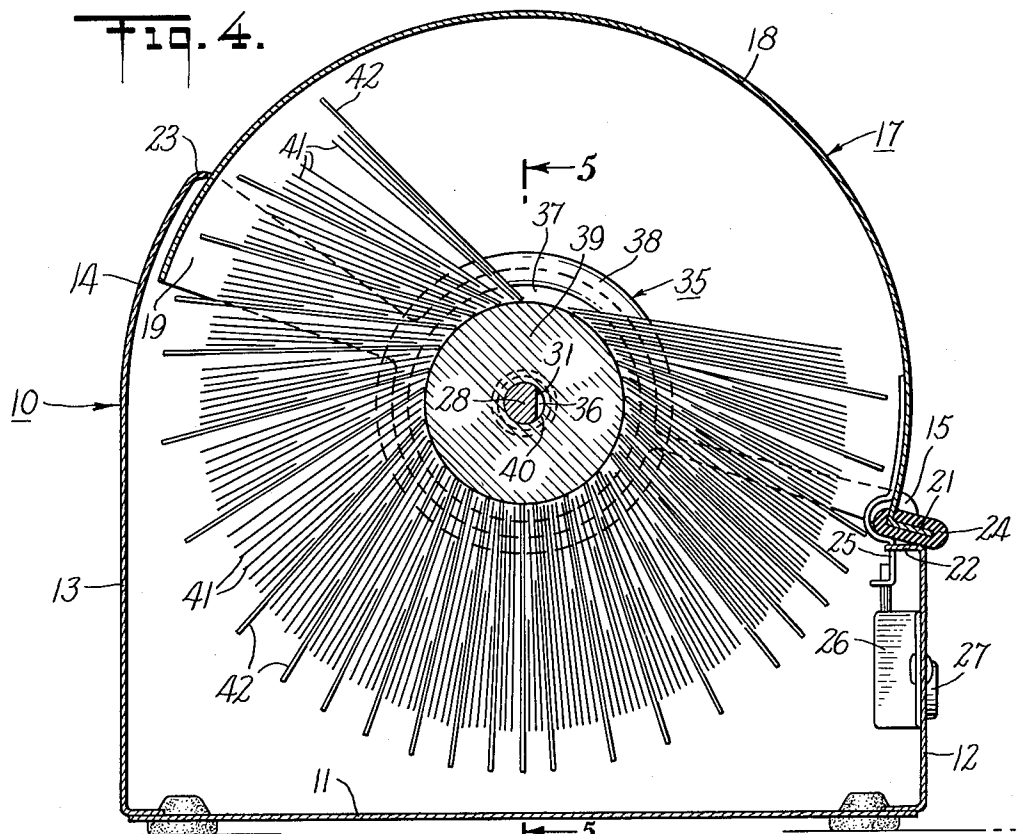
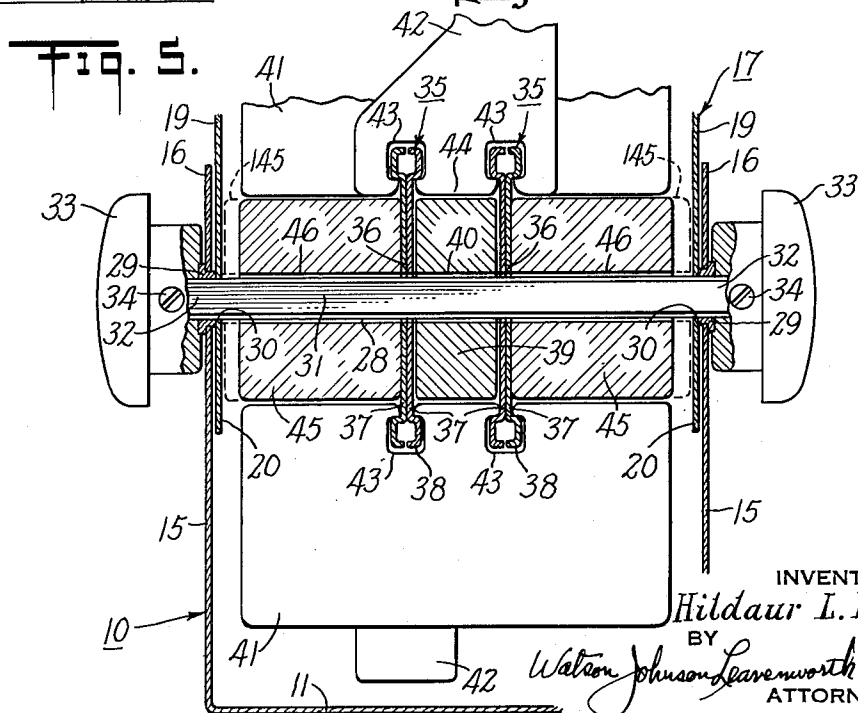
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ROTARY CARD FILING DEVICE

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The present invention relates to a rotary card filing device of the type wherein rotatable circular rail means are adapted removably to be engaged in slots of a circular stack of data or index cards to carry the same around therewith for selective inspection while permitting disengagement for inscribing data thereon.

A general object of the present invention is to provide such rotary card filing device structure which is of simple and economical construction, with the parts thereof being few, readily and cheaply produced and easily and quickly assembled in mass production; the structure featuring a plurality of cooperative units slidably mounted upon through shaft means to be maintained in operable positions thereon relative to each other by simple securing means manipulated substantially as a final step in the assembly of parts.

A more specific object of the present invention is to provide such a device which features a pair of laterally-spaced circular rails slidably mounted on journaled shaft means in such fashion as to be rotated thereby, with the rails adapted to be received in the slots of dual-slotted cards, the rail means effectively being maintained in relative spaced positions by card portions intervening the slots therein and/or intervening spacing means slidably received on the shaft means.

Another object of the present invention is to provide in such a device spacing means outboard of such pair of laterally-spaced rail means mounted for rotation upon the shaft means with the outboard spacing means slidably received on the latter and preferably of such axial dimensions as to prevent side edges of cards mounted on the rail means from coming in contact with enclosing casing structure during rotation.

A further object of the present invention is to provide standard parts which may be quickly and easily assembled by few and simple operations to form a variety of types of rotary card filing devices adapted to carry one, two or more circular stacks of cards and index tabs.

A still further object of the present invention is to provide a structural embodiment of the device which may be readily constructed and which permits efficient use and simple operation thereof.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements and arrangement of parts, which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of an embodiment of the present invention shown by way of example in the drawings, with a closing hood of casing structure thereof swung back for exposing index cards to view and permitting access thereto;

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Fig. 2 is a side elevational view of the device shown in Fig. 1, but to a smaller scale and with the hood closed;

Fig. 3 is an enlarged detail plan, with parts broken away, of that portion of a card or tab guide adapted to be mounted on rail means of the device shown in Figs. 1 and 2;

Fig. 4 is an enlarged transverse sectional view taken substantially on line 4—4 of Fig. 1, but with the casing hood closed;

Fig. 5 is a sectional view, with parts broken away, taken substantially on line 5—5 of Fig. 4; and

Fig. 6 is an axial section, with parts broken away and omitted, of modified shaft means and spacing structure interposed between rail wheels for support of two stacks of cards and guide tabs, assembled from standard parts which may be employed to form such a device for support of one or greater numbers of stacks in the practice of the present invention.

Referring to the drawings, in which like numerals identify similar parts throughout, it will be seen that an embodiment of the invention shown, by way of example, in Figs. 1 to 5 incl. may comprise an open-top casing base 10, preferably formed of sheet metal, having a substantially rectangular bottom 11; a relatively shallow, substantially rectangular front panel 12; a deeper back panel 13 having an arcuately-shaped upper portion 14; and side panels 15, 15 each provided with a sector-shaped wing 16. Each sector-shaped wing 16 defines a journaling portion of each side panel 15 of the casing base. The casing also includes an arcuate closing hood 17 adapted to be nested in the casing base 10 when swung back to the card-exposing position shown in Fig. 1, and includes an arcuately-shaped or curved top 18 adapted to be rotated inward of the curved portion 14 of the back panel 13, and laterally-spaced arcuate side walls 19, 19 located inwardly of and juxtaposed to casing base side panels 15, 15. The side walls 19, 19 of the hood 17 also include sector-shaped wings 20, 20 likewise defining journaling portions thereof. Preferably, the front edge of the curved top 18 of hood 17 is turned radially outwardly to provide a lip flange 21 to serve as a stop for alternate cooperative engagement of an intumed flange 22 on the top edge of the front panel 12 and top edge 23 of curved portion 14 of back panel 13. Preferably, stop flange 21 is equipped with a trim strip or covering molding 24. The hood 17 is preferably provided with a latch hook 25 projecting therefrom beyond lip flange 21 and trim strip 24 to cooperate with latch mechanism 26 mounted on the rear side of front panel 12, which, if desired, may include a lock having its key-receiving rotatable plug 27 thereof extending through a hole in the front panel, as shown in Figs. 1 and 4.

The sector-shaped wings 16, 16 of casing base 10 are suitably apertured to provide journals for a transverse through shaft 28 and preferably carry in their apertures bearings 29, 29 through which the shaft is rotatably supported. The sector-shaped wings 20, 20 of hood 17 are likewise apertured at 30 to journal the hood 17 on shaft 28 when the latter is received therethrough and rotatably supported in bearings 29, 29, with the hood nested in the casing base 10. Since the shaft 28 is intended rotatably to carry with it certain rail means, it is preferably in the form of a cylindrical rod flattened on one side thereof at 31, although it may be of any other desired non-circular shape in cross-section, or such rail means may be keyed thereto. Through shaft 28 has projecting ends 32, 32 extending outwardly of casing base side panels 15, 15 with each receiving thereon a manual knob 33 fixed to the shaft by suitable means, such as a set screw 34.

As will be seen of Figs. 4 and 5 each of a pair of rail

means 35, 35 preferably comprises a circular wheel having a hub portion 36 provided with a non-circular hole shaped complementary to the flatted shaft 28 to be slidably receivable thereon but non-rotatable relative thereto so that the shaft will rotate the rail wheels. As indicated in Fig. 5, each rail wheel 35 preferably is formed from a pair of opposed stamped plates 37, 37 shaped circumferentially to provide opposed U-shaped peripheral flanges suitably secured together to form hollow enlarged circular rails 38, 38. A central annulus 39, to serve as an intervening spacer means or block, is located between the rail wheels 35, 35, and, as seen from Fig. 4, its axial hole 40 through which shaft 28 is received may be cylindrical since it is not necessary that it be positively rotated by the shaft, although in the rotation of the latter it usually is carried around therewith. A circular stack of substantially rectangular index cards 41—41 and intervening tab guides 42—42 are mounted on the laterally-spaced rail wheels 35, 35 by means of a pair of T-shaped slots 43, 43 in each. Consequently, the index cards 41—41 and tab guides 42—42 are readily mountable upon and dismountable from the laterally-spaced rail wheels 35, 35 in a manner known in the art. In such structure, the zone or portion 44 between slots 43, 43 of each index card 41 or guide tab 42 may serve as spacing means to maintain the rail wheels 35, 35 in properly spaced zones of rotation when the device is fully equipped with a stack of the cards and guide tabs extending almost completely about the rail wheels. The intervening spacer block or annulus 39 also supplements this spacing function, but it is to be understood that though the presence of both is desired in the commercial embodiment of the present invention, the portions 44 of the cards may be employed alone to serve that function.

A pair of outboard spacing blocks or annuli 45, 45 are also slidably mounted on shaft 28, each being located between the casing journal or the journaling wing 20 of hood 17 and the nearest rail wheel 35. Like the central annulus 39, the outboard annuli 45, 45 may also have their axial holes 46, 46 substantially cylindrical rather than shaped complementary to the cross-sectional shape of flatted shaft 28 since, for like reason, they need not rotate therewith although they usually will in operation. Each outboard spacing block or annulus 45 preferably is of such length as to extend laterally beyond the adjacent edge of each of the index cards 41—41 so as to prevent the latter from dragging against the inner face of hood side walls 19, 19 with limited axial movement of shaft 28 and the units mounted thereon. However, they preferably are of a length so as to provide end clearance for permitting some limited axial movement of the assembled units on shaft 28, and may thus move alternately outwardly to the dotted line positions 145, 145 indicated in Fig. 5. In other words, the stack of units on shaft 28, including the outboard spacers 45, 45 the rail wheels 35, 35 and the central spacer 39 constitutes a drum structure which is preferably longer than the width of cards 41—41 but appreciably shorter than the lateral distance between the inner faces of the side walls 19, 19 of the casing hood 17.

Although only one manual knob 33 need be provided on one projecting end 32 of shaft 28 for rotation thereof, the employment of two such manual knobs, one on each projecting end of the shaft, simplifies the means for limiting or preventing axial movement thereof and to maintain the parts in their relative assembled positions. Further, the provision of such two manual knobs 33, 33 allows easy operation of the device with either hand.

In assembling the parts of the embodiment of the device shown by way of example in Figs. 1 to 5, no particular skill is required to fit one manual knob 33 to one end 32 of shaft 28 and fix it thereto by set screw 34, and then to carry out the following few simple assembly operations. The other end of the shaft is then inserted through one of the bearings 29, 29 and, with hood 17 nested in casing

base 10, through the journal hole 30 in the adjacent hood side wall 19. Thereafter, the leading end of the shaft is slid forward successively through one outboard spacing annulus 45, one rail wheel 35, the central spacing annulus 39, the second rail wheel 35, and the second outboard spacing annulus 45 in that order, finally to be projected through the other hood journal hole 30 and the second bearing 29. The final step in the assembly, other than the mounting of the stack of index cards and guide tabs on the rail wheels, consists simply of applying the second knob 33 to the other projecting end 32 of the shaft 28 and tightening its set screw 34. The stack of cards 41—41 and intervening guide tabs 42—42 are then mounted upon the laterally-spaced rail wheels 35, 35 by snapping them into position with the rail heads 38, 38 successively received in the pairs of T-shaped slots 43, 43 in each of the card and tab elements.

In operation of the embodiment of the device shown by way of example in Figs. 1 to 5, the hood 17 may be secured to the closed position shown in Fig. 4 by the locking latch comprising means 25 and 26 so as to conceal any data that may be applied to the index cards from unauthorized inspection. With unlatching of the hood 17, it may be swung back to nest in the casing base 10 rotatably about shaft 28 so as to expose the card and index tab contents to view, as indicated in Fig. 1. Rotation of either manual knob 33 will cause shaft 28 to rotate therewith rail wheels 35, 35 to carry a selected portion of the circular stack of cards around therewith to the access and inspection position depicted in Fig. 1. The spacing annuli 39, 45 and 45 need not, but actually do, rotate with the shaft 28, and together serve as a supporting drum on which the rail heads 38, 38 mount the slotted edges of the index cards and guide tabs, and rotation of the latter with that drum means is assured by virtue of the fact that the rail wheels are fixed to the shaft to be rotated thereby. During such operation, limited end play of the units assembled on the shaft 28 is permitted, as previously explained, but with proper dimensioning of the spacers the side edges of the stack of cards and tabs are preferably kept free from contact with the inner faces of the side walls 19, 19 of the hood 17 so as to avoid undue resistance to rotation and possible damage to the cards.

Within the scope of the present invention, use of shaft means formed of a plurality of parts is contemplated, as will be understood by reference to Fig. 6. As therein indicated, the shaft means may comprise two axially aligned shaft sections or lengths, each of which may be a duplicate of shaft 28, having their opposed inboard ends 47, 47 suitably coupled or connected together. The coupling means may comprise an open-ended tube or sleeve 48 loosely receiving or telescoping over shaft ends 47, 47 to hold them substantially in alignment, with suitable means to limit endwise movement to avoid accidental disengagement. Those shaft ends preferably are rotatable relative to each other in sleeve 48. For example, each of the shaft sections 28 may be rotatably mounted or have its inboard end 47 thrust through one of the bearings 29 in a side wall 115 of the base and journal hole 30 of hood side wall 119 to be telescopically received in one end of sleeve 48, with a lock collar 49 fixed thereon just inboard of the hood side wall by a set screw 50. The casing base and hood of this embodiment may be similar in all respects to 10 and 17 of the Figs. 1 to 5 incl., embodiment except for being wider to accommodate two stacks of index cards and guide tabs, side by side, for which the Fig. 6 embodiment is intended.

Preferably the coupling means 48 of Fig. 6 is housed in a cylindrical spacer shell structure 51 having its opposite ends abutted against the inner faces of the inboard rail wheels 35, 35 of the two pair shown mounted on the shaft lengths 28, 28, in a manner similar to their mounting on the shaft of the embodiment shown in Figs. 1 to 5 incl. Shell structure 51 may comprise two abutted metal cups

52, 52 as shown, with each serving as part of the drum structure for one of the two stacks of cards as in the case of the use of cylindrical spacer block 39. In order to maintain cylindrical shell structure 51 substantially coaxial with shaft lengths 28, 28, axial holes 53, 53 in transverse bottoms 54, 54 of cups 52, 52 may be of such diameter as to receive coupling sleeve 48 closely, but preferably not snugly, and it is to be understood that such a close fit is not required. The circular stack of index cards and guide tabs when mounted on one of the pairs of rail wheels 35, 35 provide by their inner or bottom edges circular means of substantial strength which will limit effectively undue radial motion of drum elements. This is also true of the outboard spacer cups 52 and 52, which are positioned to the inner sides of hood side walls 119, 119, and shallower inboard spacer cups 55 and 55, each located between a pair of the rail wheels 35, 35. Of course, sections of tubing or cylindrical shells may be used in lieu of spacer cups 52—52 and 55, 55, and it is to be understood that, if desired, suitable means for more positively maintaining concentricity of such hollow spacer means may be employed, such as housed units, e. g., discs or the like. Also with the employment of cylindrical spacer shells, or spacer cups of the type illustrated when reversed so that their edges abut rail wheels 35—35, such concentricity maintaining means may comprise circular shoulders or other abutment supports, such as a circular series of laterally-extending lugs on the adjacent face of the rail wheel. Such spacer shell structures permit housing therein of lock collars 49, 49, which limit outward axial motions of shaft lengths 28, 28, as shown in Fig. 6.

In assembling the units of such an embodiment as shown in Fig. 6, it will readily be seen that each of the shaft lengths 28, 28, equipped on its outer end with a suitable manipulating knob 33, may have its inner end 47 thrust inward successively through support bearing 29 in one of the casing side walls 115, hole 39 in adjacent hood side wall 119, one of the lock collars 49, any one of the four outboard spacer cups 52, a rail wheel 35, one of the inboard spacer cups 55, another rail wheel 35, another of cups 52, and into one end of coupling tube 48. After the elements of both drums are so assembled on the two shaft lengths 28, 28, successively each of the hood side walls 119 will be sprung away from the adjacent spacer cup 52, the adjacent lock collar 49 adjusted approximately to the position shown and its set screw 50 tightened.

In operation of the embodiment of Fig. 6, with two stacks of index cards and guide tabs suitably mounted on the two pairs of rail wheels 35—35, it will be understood that manual manipulation of one of the knobs 33 will rotate the shaft length 28 on which it is mounted so as to rotate therewith the rail wheels 35, 35 carried by the latter, to carry the cards and tabs thereon around therewith to any selected point. Engagement of the drum elements by the inner edges of the cards and tabs in that stack will assure maintenance of sufficient concentricity of the drum elements inside that stack and will cause them to be carried around therewith, while the other stack and elements of the other drum structure therein will remain stationary, as permitted by rotation of either shaft end 47 in sleeve 48.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction and different embodiments of the invention could be made

without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

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

1. In a rotary card filing device a shaft means and card-receiving rail means assembly comprising, in combination; shaft means comprising axially aligned rotatable lengths having opposed ends, coupling means receiving and connecting together said opposed ends, at least one of said shaft lengths being rotatable relatively to the other of said shaft lengths and to said coupling means, card-receiving rail means coaxially and slidably mounted on each of said shaft lengths in a relatively non-rotatable manner whereby each of said rail means is rotatable by the shaft length on which it is mounted, spacer means interposed between the rail means nearest their coupled ends, and separate means associated with each of said shaft lengths for separately rotating the latter.

2. The shaft means and card-receiving rail means assembly as defined in claim 1 characterized by said spacer means as including cylindrical shell means housing said coupling means.

3. The shaft means and card-receiving rail means assembly as defined in claim 1 characterized by said coupling means as comprising an elongated sleeve telescoped over the opposed ends of said shaft lengths.

4. A rotary card record device comprising a rotatable shaft, means for supporting said shaft at spaced points therealong, means for rotating said shaft, a pair of separate rail wheels, coaxially carried upon said shaft between said spaced points and being axially slidable relatively to said shaft and constrained to rotate therewith, and a circular stack of similarly dual-slotted record cards extending about both said wheels; each of said wheels having integral peripheral rails adapted for engagement within the slots in said circular stack of cards to hold the latter upon said wheels; said shaft being in two coaxial parts interdependently supported at adjacent ends thereof and manually rotatable relatively to the device and relatively to each other, and the device further including separate means associated with each of said shaft parts for separately rotating the latter, and a second pair of such rail wheels; each of said pairs of wheels being carried upon a different one of said shaft parts and being axially slidable on and constrained to rotate with the shaft part upon which it is carried.

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