Sept. 4, 1956 H. L. NEILSEN 2,761,750

ROTARY CARD FILING DEVICE AND CARD BACKING MEANS THEREIN

Filed July 3, 1951 2 Sheets-Sheet 1

Fig. 1.

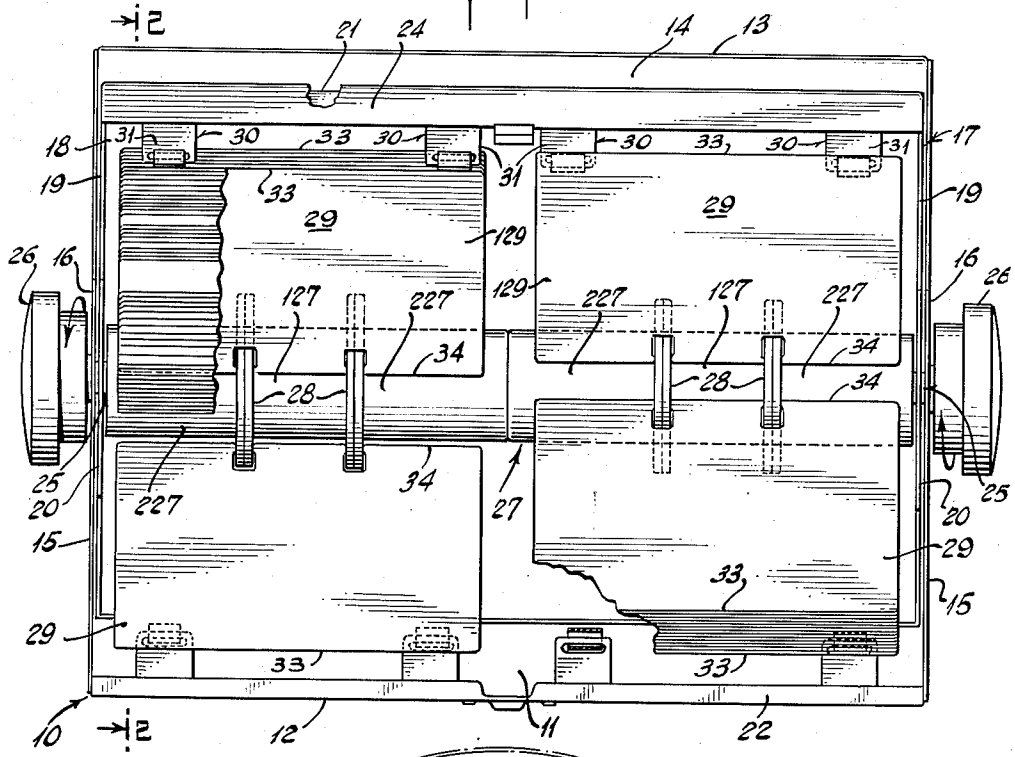
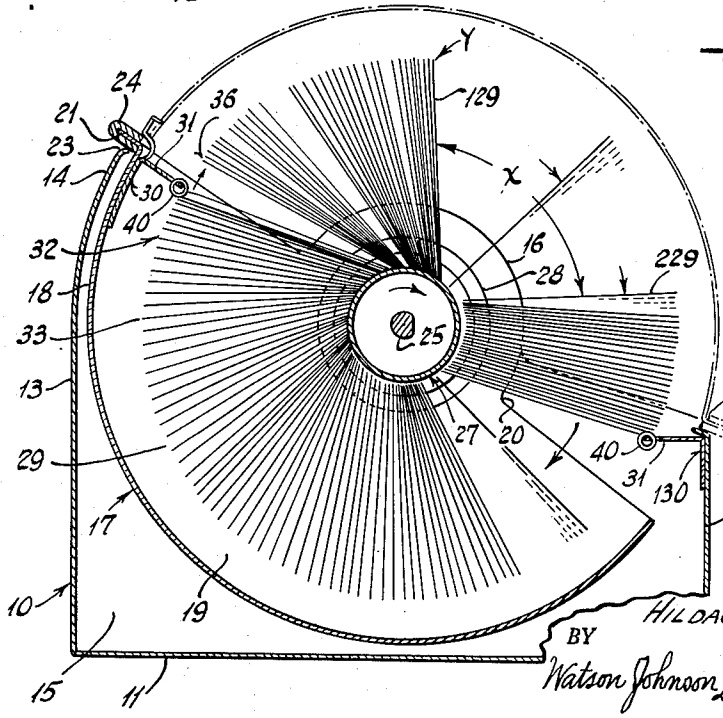


Fig. 2.



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Fig. 1.

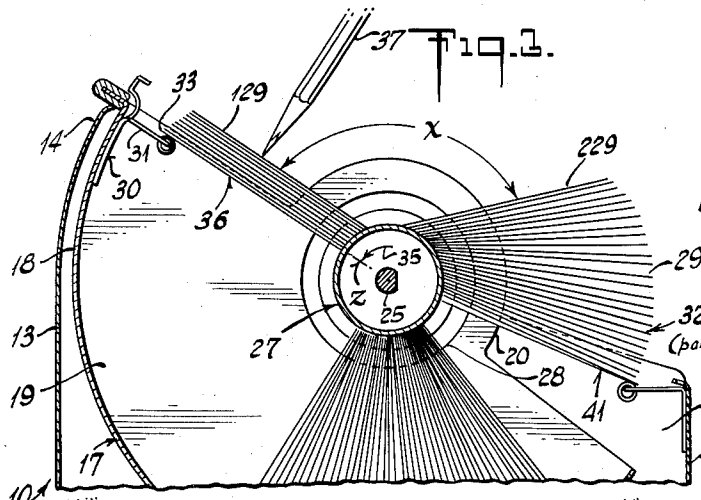


Fig. 5.

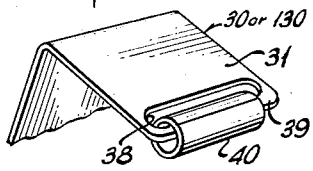


Fig. 6.

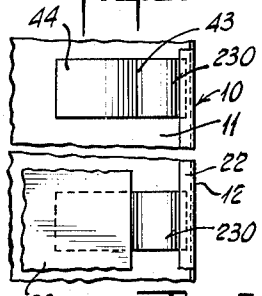


Fig. 4.

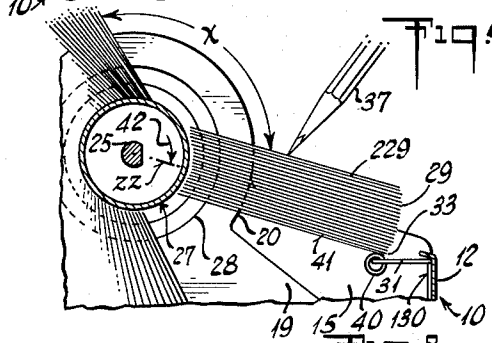


Fig. 7.

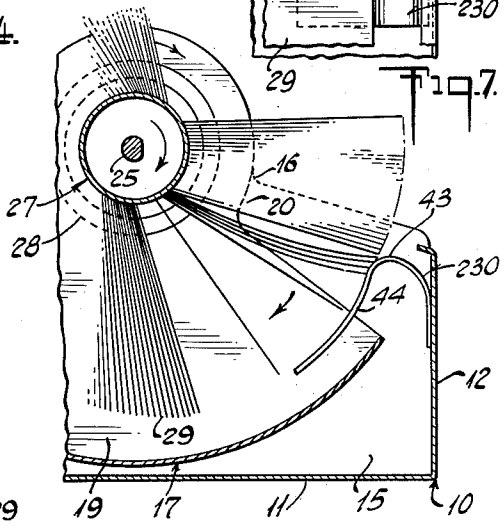


Fig. 8.

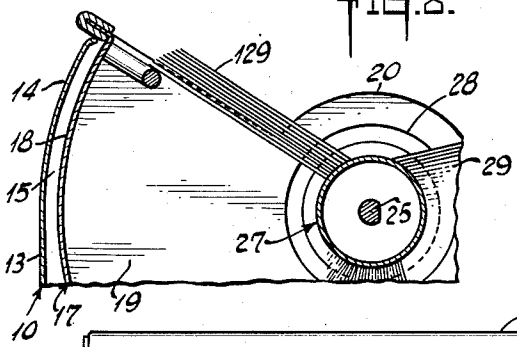
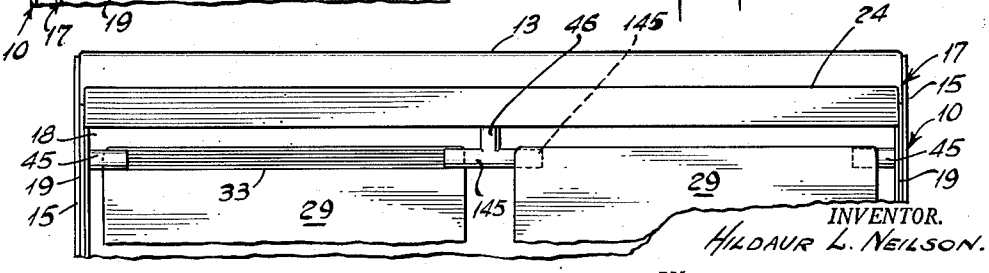


Fig. 9.



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2,761,750

ROTARY CARD FILING DEVICE AND CARD BACKING MEANS THEREIN

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Application July 3, 1951, Serial No. 234,947

2 Claims. (Cl. 312—189)

The present invention relates to a rotary card filing device, preferably of the type disclosed in my copending application for "Rotary Card Filing Device," Serial No. 218,363, filed March 30, 1951, now Patent No. 2,731,017. In such a device rotary wheel means are adapted to carry around therewith a circular stack of index cards and guide tabs. The present invention more particularly contemplates use therein of card backing means to facilitate posting entries on card faces without removal of cards.

A general object of the present invention is to provide certain simple, easily and cheaply made, and readily and economically mountable card backing means for or in rotary card filing devices of such type. The card backing means is such as will tend to support and temporarily hold in a relatively fixed position an otherwise movable and relatively flexible card with sufficient effectiveness and rigidity as to permit ready manual writing or posting of entries on an exposed face thereof without necessitating removal from the circular stack and without unduly interferring with desired rotation of the latter.

A more specific object of the present invention is to provide such backing means in the form of simple bracket structure with portions thereof projecting a relatively short distance into an outer part of the circular zone of card travel so that the cards in forward rotation are capable of riffling therepast easily while being adapted, upon cessation of card rotation, effectively to back any adjacent card to facilitate manual posting of entries on one or more card faces exposed at a near stack separation.

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 top plan view, with parts broken away, of a card filing device of the indicated type wherein two circular stacks are adjacently mounted on rotary wheel means, with the casing parts in open positions; the cards of one stack being shown riffling forward past an embodiment of card backing means of the present invention while cards of the other stack are shown being brought effectively to rest against such backing means preparatory to manual entry of data on either or both of the card faces exposed at the shown stack separation;

Fig. 2 is a sectional elevation, with parts broken away, taken substantially on line 2—2 of Fig. 1;

Figure 3 is a view similar to Fig. 2 showing, after cessation of forward rotation of a stack, the act of entering data manually on the leading exposed card face defining the back of the stack separation angle with effective employment of rear backing means;

Fig. 4 is a view similar to Fig. 3 showing the act of entering data manually on the trailing exposed card face defining the front of the stack separation angle with effective employment of front backing means;

Fig. 5 is an enlarged perspective view, with parts broken away, of card backing bracket structure shown in Figs. 1 to 4, incl.;

Fig. 6 is a detail or top plan view, with parts broken away, of casing structure, a circular stack of cards rotatably mounted therein, and modified front card backing bracket structure;

Fig. 7 is a view similar to Fig. 2 of the modified structure of Fig. 6;

Fig. 8 is a view similar to Fig. 3 (without the pencil being shown) showing a modified form of rear card backing bracket structure; and

Fig. 9 is a top plan view, with parts broken away, of the rear portion of a card filing device similar to that shown in Fig. 1 as modified by the employment of the card backing structure shown in Fig. 8.

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 receptacle **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 preferably provided with a sector-shaped wing **16**. Each sector-shaped wing **16** defines a journalling 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 the drawings, 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** may also include sector-shaped wings **20**, **20** likewise defining journalling portions thereof. Preferably, as best seen in Fig. 2, 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 inturned flange **22** on the top edge of the front panel **12** (as indicated in dotted lines) when the casing is closed, and top edge **23** of curved portion **14** of back panel **13** when the casing is open. It is preferred that stop flange **21** be equipped with a trim strip or covering molding **24**.

The sector-shaped wings **16**, **16** of casing base **10** are suitably apertured to provide journals for transverse through shaft means **25** consisting of a single length or made up of a plurality of aligned lengths. The sector-shaped wings **20**, **20** of hood **17** are likewise apertured to journal the hood **17** on shaft means **25** when the latter is received therethrough and rotatably supported in base wings **16**, **16** with the hood nested in the casing base receptacle, as shown. Through shaft means **25** has projecting ends extending outwardly of casing base side panels **15**, **15**, with each receiving thereon a manual knob **26** fixed to the shaft means by any suitable means. Thus, when shaft means **25** is made up of two or more aligned lengths

each knob **26** may rotate one relative to the other.

As will be seen from Fig. 1, shaft means **25** carries a rotary structure **27** comprising two sections with each of the latter carrying a pair of laterally-spaced rail wheels **28, 28**, and suitable spacing means or sleeves **127** and **227**. Each pair of rail wheels **28, 28** is adapted to be rotated by the knob **26** outboard thereof, irrespective of rest or movement of the other pair. A circular stack of substantially rectangular index cards **29—29** are mounted on each pair of the laterally-spaced rail wheels **28, 28** by loose reception of the latter in a pair of T-shaped slots in each card. Consequently, the index cards **29—29** may individually slide around the pair of its mounting rail wheels **28, 28** but a stack thereof tends to limit such sliding to a small extent so that the cards are carried around with rotation of the rail wheels on which they are mounted. The rotary structure **27** may be of the type illustrated in Fig. 6 of my identified application to permit the two stacks to be individually rotated in such manner.

The present invention features card backing means, either as an accessory to or in combination with structural elements of the rotary card filing device previously described. Usually index cards, such as those illustrated at **29**, are formed of relatively thin pressed board or "stiff" paper having a fair degree of flexibility, which facilitates their handling in typewriters. However, such flexibility occasions difficulty in manual posting of data thereon with the card left in the device. Thus, the card backing means of the present invention not only provides suitable backing support for any particular or selected card to facilitate manual posting of entries thereon, but also is so designed as to cooperate with a group of those cards so that the composite body of the group provides stiffening of the top card and effective backing for the exposed face of that card on which entries are to be manually posted. For this purpose, suitable bracket means are provided having a portion or portions, extending a relatively short distance into the circular zone of travel described by the stack of cards in rotation, preferably in the vicinity of the circular path described by the outer edges of the cards. A preferred embodiment of such card backing means is shown in Figs. 1 to 5 incl., wherein it is proposed to employ such means in a twin stack rotary card filing unit, with each of the two stacks. It will be understood that such card backing means may be employed to advantage in a single stack device but it has been found there is less need for such means in single stack devices than there is in plural stack devices.

The preferred card backing means may comprise for each circular stack of cards **29—29** a pair of laterally-spaced brackets **30, 30** secured in any suitable manner, such as by spot welding, to the inner face of curved top portion **18** of hood **17** in the vicinity of its front edge or lip **21**. Each bracket **30** has a portion **31** projecting inwardly, and preferably substantially radially, toward shaft **25** or the axis of rail wheels **28, 28**. The length of projecting portion **31** of each card backing bracket **30** preferably is of a length as to project a short distance, or slightly, into the circular zone of travel described by the cards **29—29** in rotation and in the vicinity of the circular path **32** described by the outer edges **33—33** of the cards, as best seen in Fig. 2. Such structure provides toward the back and near the top of the rotary card filing device, when the hood is in the shown open position, card backing means for the leading exposed card face **129** defining the back of stack separation angle "X."

The stack separation indicated at "X" is provided by a natural tendency for adjacent cards in a stack to spread apart on the upper side thereof toward the front in forward rotation of the stack by virtue of the fact that the outer circumference of the circular rail elements of wheels **28, 28** is usually appreciably greater than the combined thickness of the stack of cards when unmounted, and since the circumference of the zone of travel is very much greater than the outer circumference of the rail

wheel structure, thereby providing an appreciable amount of space between many of the adjacent outer card edges **33—33**. Also, such natural stack separation or spreading is enhanced by the loose mounting of the rail elements of wheels **28, 28** in the card slots. As a result, when a stack of cards **29—29** is rotated forward by one of the knobs **26**, their respective inner edges **34—34** are dragged forward with a certain amount of card lay-back and with many or most of the cards separated from each other at least at their outer edges **33—33**, as indicated in Fig. 2. Thus, each card **29** is substantially unbacked by following cards so that its flexibility will permit such flexure as to allow its outer edge **33** to spring past the inward end of projecting portion **31** of each card backing bracket **30**. Consequently, rotation of the stack of cards **29—29** causes their outer edges to riffle and spring past the pair of backing brackets **30, 30**, also as illustrated in Fig. 2. During such forward rotation, the cards will leaf over successively at the stack separation by force of gravity, so that a card whose leading exposed face **129** had defined the back of the stack separation angle "X" will next have its trailing exposed face **229** define the front of that stack separation angle.

In operation of that embodiment of the present invention, let it be assumed that the operator desires to apply indicia manually to the leading exposed card face **129** of the card at position "Y" in Fig. 2. Upon cessation of forward rotation of the stack, the operator may then turn it back a short distance in the direction of the arrow **35** in Fig. 3, such as by application of slight manual pressure on leading card face **129**, so that the card which last snapped past the pair of backing brackets **30, 30**, indicated at **36** in Fig. 2, will be returned or pushed back substantially to radial abutment line "Z" shown in Fig. 3, with its outer edge **33** supported by the pair of brackets. If the cards **29—29** were made of stiff board, or the like, having sufficient inherent rigidity, card **36** alone would be effectively supported by the backing brackets **30, 30** so as to permit posting of entries thereon, and such use of the invention is contemplated within the scope thereof. However, as previously pointed out, it is usual that such cards have a fair degree of flexibility, and thus a plurality thereof stacked up to back the preceding stack separation exposed face **129** is needed to provide the rigidity necessary to the posting of entries on that exposed face with a pencil, or the like, as indicated at **37** in Fig. 3. This desirable feature largely dictates the operative positions of brackets **30, 30**.

It is not essential to practice of the present invention that a pair of laterally-spaced brackets **30, 30** be employed for such backing function since a single bracket located substantially intermediate the card side edges will perform certain desired backing action, but it has been found that the pair of brackets, each located between the mid-point of the outer card edge **33** and a side edge, as proposed in Fig. 1, gives effective operation in a desirable manner. Further, it will be obvious that a single bracket which will provide support for the major portion of the outer card edge **33**, such as across from the indicated locations of one bracket **30** to the other, will give proper backing operation, but such structure is more costly and has been found to be unnecessary.

As most clearly indicated in Fig. 5, the terminal end of projecting bracket portion **31** advantageously may be equipped with freely rotatable roller means. Such roller means may be provided by transversely slotting the end of bracket portion **31** at **38** to provide a transverse rod or bar **39** of certain cross-sectional size. A curved strip of sheet material, such as deformable plastic or metal, may be inserted through the slot **38** and shaped to cylindrical form to provide roller **40** having the hole therethrough of a cross-sectional size appreciably larger than the cross-sectional size of bar or rod **39** so as to permit appreciable radial play of the cylinder about the rod. As a result, outer edge **33** of each card **29** contacts and rides against

a pair of the rotatable rollers **40** to facilitate their riffling therepast. The cylindrical surface of each of the rollers **40, 40** preferably has a relatively low degree of curvature by virtue of its relatively large cross-sectional size; and that coupled with the freedom with which it is permitted freely to rotate and play about its relatively small axle rod **39** may facilitate the effectiveness of the backing thereby, since it interposes little more than the thickness of the sheet material from which the rollers are formed between the top surface of the bracket portion **31** and the back face of the card.

Since it is desirable also manually to post entries on the trailing exposed card face **229** defining the front of the stack separation angle "X," similar backing brackets **130, 130** are preferably provided at the front of the rotary index device. As shown in Fig. 2, such brackets **130, 130** are of a structure similar to brackets **30, 30** and are secured to the inner face of the top edge of front wall **12** adjacent its flange **22** in any suitable manner, such as by spot welding, with their roller-equipped portions **31, 31** projecting inwardly a relatively short distance into the zone of travel of the stack of cards **29—29** toward the drum structure **27**. As shown in Fig. 4, when it is desired manually to post an entry on the trailing exposed card face defining the front of the stack separation angle "X," forward rotation of the stack is discontinued so that the cards in the group collected above the brackets **130, 130**, indicated in Fig. 2, may hinge down and become somewhat compacted, as indicated in Fig. 4, with the bottom card **41** of that group having its outer edge **33** resting securely on projecting portions **31, 31** of those front brackets. Such compacting of the group of cards may be accomplished by a slight forward rotation of the stack in the direction of the arrow **42** approximately to the line of rest "ZZ" as shown in Fig. 4, such as by application of slight manual pressure on trailing card face **229**, particularly as entry with the use of pencil **37** is begun.

It is apparent from the drawings and from the previous discussion of the action of the cards with respect to the rear backing brackets **30, 30** mounted on the hood **17**, that the cards will be successively riffled past the front backing brackets **130, 130** in forward rotation of the circular stack in a smiliar manner until that rotation ceases. The weight of the group of cards upon the front brackets **130, 130** may be more than the pressure of the spaced cards successively against the back brackets **30, 30** in forward rotation of the circular stack, thereby tending to lessen flexure of each rested card **41**. However, the outer edge **33** of each card, as it is brought to the contacting position **41** relative to the front brackets **130, 130**, is readily freed past the front bracket rollers **40, 40** since lay-back of the entire group will be increased with continued forward rotation of the rail wheels **28, 28** and consequent forward drag of the inner card edges **34—34**, so as successively to pull the card outer edges **33—33** from above the front brackets.

Another embodiment of the front bracket structure is shown in Figs. 6 and 7 and, as there indicated, may comprise a pair of laterally-spaced brackets **230, 230**, each curved up, over inwardly and then down to provide a rounded supporting shoulder **43** with a curved terminal end **44** extending in the direction of card rotation. The shoulder **43** is projected into the circular path of the outer edges **33—33** of the cards **29—29** a similar relatively short distance so as to function in a manner similar to front brackets **130—130** in the backing of certain groups of cards.

As indicated in Figs. 8 and 9, it is not necessary that card backing brackets be so mounted in a rotary card index device as to extend the circular zone of travel of the stack of cards from positions radially outward of the circular path of the outer edges **33—33** of the cards, as in Figs. 1 to 4, incl. As shown in Figs. 8 and 9, the projecting portions of such bracket means may project into the zone of travel from the sides thereof. For example,

there may be provided a pair of card backing brackets for each circular stack of cards by a laterally-projecting pin or finger **45** mounted on the inner face of hood side wall **19** and a similar finger **145** forming part of a T-headed bracket **46** mounted on and medially of the inner face of the curved hood top **18**, as shown. Such opposed laterally-extending pins will engage behind the corner portions of the outer edge **33** of each card **29** to back it similarly as in the case of brackets **30, 30**. It is to be understood that if, due to a relatively high degree of flexibility of the cards, support by the spaced brackets is desired at points nearer the middle of each outer card edge **33**, the fingers **45** and **145** may be lengthened or a continuous bar may be substituted therefor. Such continuous bar, which may extend across one or both the circular paths of the outer edges **33—33** of the two stacks of cards **29—29**, of course, may be in the form of a freely rotatable roller to facilitate riffling of the cards therepast.

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 having a circular, rotary, card holder for so holding a circular stack of resilient cards as to provide angular separation of the cards at a circumferential point to permit writing to be applied, conveniently, upon card faces defining such an angle of separation; backing means, for backing such a card at one side of said angle of separation, comprising abutment means supported, against movement radially of said stack, at a point clear of the zone of travel described by the stack of cards during rotation and having an abutment member projecting continuously into said zone to a card supporting position which is within but relatively close to the radially outermost limit of said zone of travel and toward one side of said angle of separation and at the side of the said card which is remote from said angle; the adjacency of the card supporting position of said abutment member to the said radially outermost limit of the said zone of travel being such as to permit cards in such a stack to resiliently flex and riffle past the abutment member during rotation of the card holder when said cards are in positions substantially tangential to the axis of rotation of the card holder but to back a card in such a stack against passage past said abutment member when the card holder is at rest and said card is approximately radial to said axis; and the device and its card backing means further including a stationary casing base having a top opening and an arcuate cover member which is pivotable to close said opening; said cover member being adjacent to the radially outermost limit of said circular zone of travel; said cover member's center of curvature and of pivotal movement coinciding substantially with the card holder's axis of rotation; and the said abutment means being supported toward one arcuate extremity of said cover member in position to back a card of such a card stack when the cover member is in open position.

2. A rotary card filing device and card backing means therefor according to claim 1, further including additional abutment means having a second such abutment member fixed to said casing base adjacent to the latter's

said top opening; the two said abutment members, when the cover member is in open position, being adapted to back two cards defining opposite sides of said angle of separation.

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