April 1, 1947. E. E. KNITTEL 2,418,357

ROTARY CARD FILING DEVICE

Filed Nov. 22, 1944 2 Sheets-Sheet 1

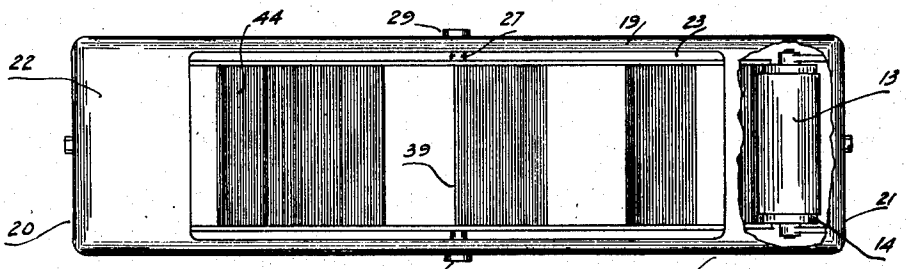


Fig. 2.

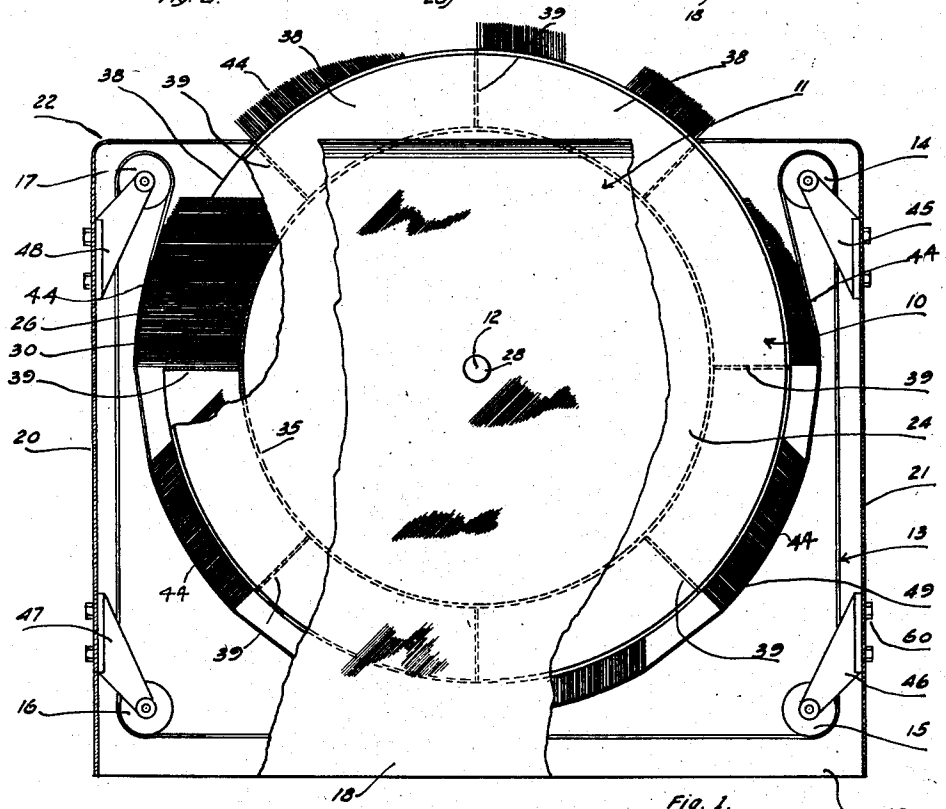


Fig. 1.

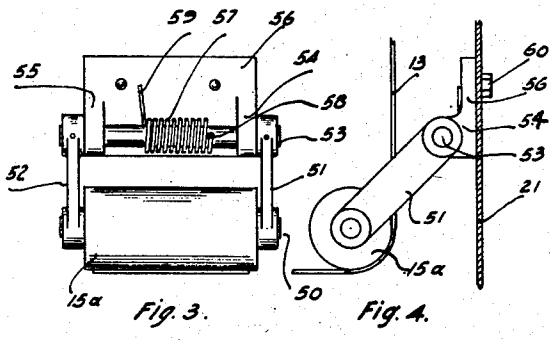


Fig. 3.

Fig. 4.

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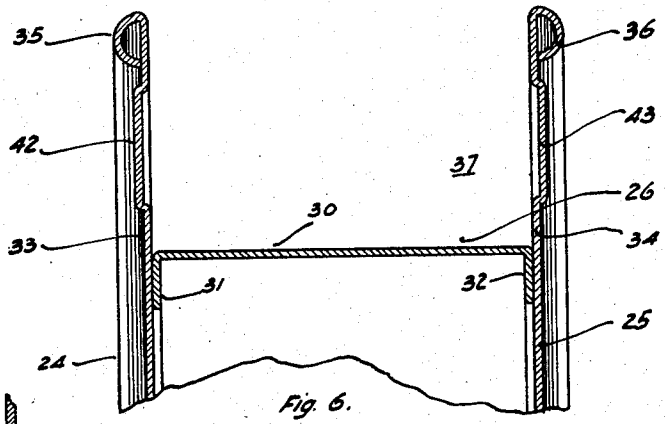


Fig. 6.

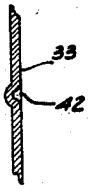


Fig. 7.

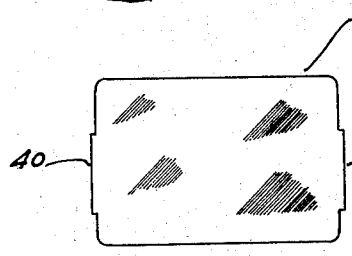


Fig. 8.

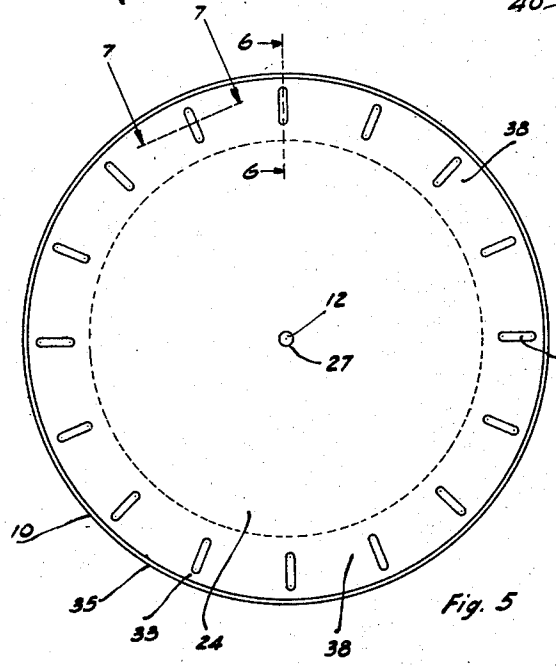


Fig. 5

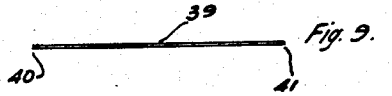


Fig. 9.

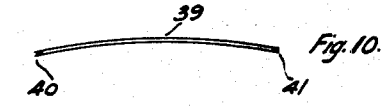


Fig. 10.

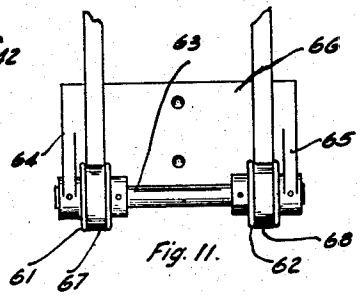


Fig. 11.

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Patented Apr. 1, 1947

2,418,357

UNITED STATES PATENT OFFICE

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ROTARY CARD FILING DEVICE

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Application November 22, 1944, Serial No. 564,563

9 Claims. (Cl. 45—3)

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This invention relates to devices for filing cards and the like and more particularly to rotary filing devices.

It is not uncommon practice in many types of businesses to have a filing system wherein information, data or records are kept on individual cards. The cards may be used for various purposes and it is customary to keep them in a systematic manner in files where they may be referred to conveniently. In some systems it is necessary to remove and replace the cards from time to time for one purpose or another.

It is an object of the present invention to provide a device for filing such cards wherein the cards are carried on a rotatable drum without the necessity of attaching individual cards to the drum. The cards may be filed in a recess annularly disposed about the periphery of the rotatable drum in a manner similar to that of filing in a laterally sliding drawer or box. Even though the drum is rotated, the cards will not fall away but will be prevented from falling out of the recess by a movable endless belt, one run of which lies adjacent the card receiving recess.

Although the novel features which are believed to be characteristic of the invention will be pointed out in the claims appended hereto, the invention itself as to its objects and advantages, and the manner in which it may be carried out, may be better understood by reference to the following description taken in connection with the accompanying drawings forming a part hereof, in which,

Fig. 1 is a side view in elevation of a filing device embodying the invention; partly in section and partly broken away to better illustrate the construction;

Fig. 2 is a top plan view of the device shown in Fig. 1, with certain parts broken away;

Fig. 3 is a view in elevation of a belt carrying roller which may be used to maintain the endless belt under suitable tension;

Fig. 4 is a side view of the roller shown in Fig. 3;

Fig. 5 is a side view in elevation of the rotary drum;

Fig. 6 is a view to larger scale on line 6—6 of Fig. 5;

Fig. 7 is a view to larger scale on line 7—7 of Fig. 5 through one of the walls of the annular recess;

Fig. 8 is a view of a partition forming member for the annular recess;

Fig. 9 is a top view of the member shown in Fig. 8;

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Fig. 10 shows the partition member flexed for insertion into the recess, and

Fig. 11 shows a modified from of roller which may be used to accommodate a pair of endless belts.

Referring now to the drawings in which like reference characters denote similar parts, the device comprises, in general, a rotary drum 10 mounted in a frame 11 to rotate on its axis 12; and an endless belt 13 trained over rollers 14, 15, 16 and 17.

The frame 11 and drum 10 may be constructed of sheet metal or other suitable material, for example, wood, plastic or other material adapted for the purpose. The frame comprises side walls 18 and 19, front wall 20, rear wall 21, and a top wall 22 all forming an enclosure cabinet. The top wall 22 has an opening 23 of substantial size to permit a substantial arc of the drum to extend therethrough and above the top wall 22 as shown in Figs. 1 and 2.

The drum 10, as shown, comprises two side wall disks 24 and 25 of sheet metal and a cylindrical ring or band 26 of similar material which is secured to the disks 24 and 25. The drum is mounted on an axle 27 at its center. The axle may be mounted in suitable bearings in the side walls 18 and 19 of the frame and maintained in place by flanges 28 and 29. The peripheral band 26 comprises a cylindrical portion providing a peripheral surface 30 and has annular depending flanges 31 and 32 which may be welded or otherwise suitably secured to the side wall disks 24 and 25.

Extending outwardly from the peripheral surface 30 of the cylindrical band 26 of the drum are two annular side walls 33 and 34. As shown, these annular side walls extend outwardly at substantially right angles from the cylindrical surface 30. They are made integral with the disks 24 and 25, but it will be understood that these side walls may be separate parts and secured to the drum. Thus, the cylindrical surface 30, together with the outwardly extending annular side walls 33 and 34 provide an annular recess 37 about the periphery of the drum. The width and depth of the recess will be determined by the size of the cards intended to be filed on the drum.

If desired, the outer annular edges of the sheet metal side walls 33 and 34 may be bent outwardly in the form of a semicircle to provide convenient hand-hold rims or hand wheels 35 and 36 which may be readily grasped to facilitate manual rotation of the drum 10 upon its axis 12.

To provide individual boxes or compartments

38 in the annular recess 37 and to provide supports for cards mounted on the drum in order to maintain the cards in desired parallel relation, partition or stop members 39 are inserted at intervals in the recess around the annular recess 37. A typical partition member comprises a generally rectangular shaped plate having outwardly extending tongues 40 and 41. When a partition member is in place in the annular recess 37, the tongues 40 and 41 register with and extend into suitable indentations 42 and 43 in the side walls 33 and 34 respectively. The partition members may also be made of sheet metal or other suitable material but should be sufficiently flexible to be flexed as indicated in Fig. 10 so as to permit their insertion into the recess 37, and to permit, when the partition members take their normal flat position, the tongues 40 and 41 properly to seat in their respective grooves 42 and 43.

The cards 44, which are of stiff paper or cardboard and normally of rectangular shape, are of a width and height to removably fit into the recess 37. It will be observed that the upper arc of the drum 10, as shown clearly in Fig. 1, extends through the opening 23 in the top wall 22 of the frame and thus the cards at the top of the drum are exposed in a manner permitting ready removal and replacement in the recess 37 with the inner edges of the cards adjacent the surface 30.

To prevent the cards 44 from falling out or away from the drum when the drum 10 is rotated, there is provided an endless belt 13. The endless belt is trained over rollers 14, 15, 16 and 17, which are in turn mounted in brackets 45, 46, 47 and 48 secured to the frame 11. The belt may be of canvas or other suitable flexible belt material and of a width extending substantially across the width of the recess 37. It will be observed that the endless belt is mounted in such fashion that its upper run 49 lies adjacent the recess 37 and in an arc about the drum a substantial part of which on either side is above the axis of rotation of the drum with the remainder of this run beneath the axis of the drum. Thus, when the drum is rotated about its axis the upper run 49 of the endless belt engages the outer edges of the cards 44 and travels with the drum and also prevents the cards from falling out of the recess 37.

In order to insure that the movable belt 13 remains taut when its upper run 49 engages the outer edges of the cards, one of the rollers upon which the belt is mounted may be a "floating" roller constructed as shown in Figs. 3 and 4. It has yieldable means urging the roller in a direction to maintain the belt taut. As shown in Figs. 3 and 4, the roller designated as 15*a* may be mounted to rotate upon its axle 50 in bearings in spaced arms 51 and 52. Arms 51 and 52 are fixed to an axle 53 which in turn is mounted for rotation in bearings in lugs 54 and 55, extending from the plate 56. The plate 56 may be secured to the frame in any suitable manner as by bolts 60. A helical spring 57 about the axle 53 has one end 58 anchored to the axle. The other end 59 of the spring rests against the plate 56 and the spring urges the roller 15*a* in a direction away from the axis 12 of the drum, thus to maintain suitable tension on the movable endless belt 13.

If desired, a modified form of roller to accommodate a pair of endless belts may be used instead of plain cylindrical rollers for a single

belt. Such a modified form of roller is illustrated in Fig. 11. Instead of a single cylindrical surface as shown in Fig. 3, the roller may have two flanged pulleys 61 and 62 mounted on an axle 63 which may be mounted for rotation in a bracket having arms 64 and 65 secured to a plate 66 which in turn may be secured to the frame. When this type of roller is used a pair of narrow belts 67 and 68 are used instead of the single belt 13. This permits a space between the belts. Consequently, this form, using a pair of belts, permits of using cards which may have identification tabs extending from the outer edges of the cards; it being understood of course that the tabs are positioned on the cards so as to travel between the belts when the drum is rotated.

From the foregoing, it will be seen that the invention provides a novel card filing device which is simple in construction and which is economical to make. It may be made in large sizes or in smaller desk models and for any size of cards. It is not necessary to attach each card individually to the periphery of the drum. Any one card, or any desirable number of the cards together, may be removed from or replaced on the rotary drum without distorting the cards. This is an advantage for the reason that although the cards may be frequently handled the cards need not be distorted or mutilated. Accordingly, cards filed in the device made according to the invention are kept in good condition for running and rerunning in automatic calculating or tabulating machines where such machines are in use.

While a specific embodiment of the invention has been described to illustrate the invention, it will be understood that various changes, modifications, substitutions and omissions of parts may be made by those skilled in the art without departing from the spirit of the invention which is comprehended by the annexed claims.

What is claimed is:

1. In a device of the character described, a drum of generally cylindrical shape, a frame, means mounting said drum on said frame for rotation of said drum about its axis, radially extending members positioned circumferentially on said drum providing a recess in which to file cards with their inner edges adjacent the peripheral surface of said drum, stop members for said cards in said recess, a movable endless belt, means mounting said endless belt with one of its runs extending beneath the drum and adjacent to said recess, said belt serving to prevent cards in said recess from falling out when said drum is rotated.

2. A device for filing cards or the like which comprises a frame, a cylindrical drum, means mounting said drum on said frame for rotation of the drum about its axis, walls extending radially from the axis of said drum in planes substantially perpendicular to said axis, said walls providing an annular recess for receiving cards in a substantially radial position about the perphery of said drum, partition members for said cards in said recess, a movable endless belt, rollers mounted on said frame, said endless belt being trained over said rollers and having a run adjacent to and extending around a substantial portion of the circumference of said drum and beneath its axis and serving to prevent cards in said recess from falling out when said drum is rotated upon its axis.

3. A device for filing cards or the like which comprises a frame, a cylindrical drum, means

mounting said drum on said frame for rotation of the drum about its axis, walls extending radially from the axis of said drum in planes substantially perpendicular to said axis, said walls providing an annular recess for receiving cards in a substantially radial position about the periphery of said drum, members spaced about the periphery of said drum in said annular recess serving as guides to maintain cards filed in said recess in spaced substantially radial relationship, an endless belt, rollers mounted on said frame, said endless belt being trained over said rollers and having an upper run adjacent to and extending around a substantial portion of the circumference of said drum and beneath its axis and serving to prevent cards in said recess from falling out when said drum is rotated upon its axis.

4. A device for filing cards or the like which comprises a frame, a cylindrical drum, means mounting said drum on said frame for rotation of the drum about its axis, walls extending from the peripheral surface of said drum radially from the axis of said drum in planes substantially perpendicular to said axis, said walls providing an annular recess for receiving cards in a radial position about the periphery of said drum, stop members spaced around said drum in said annular recess, a movable endless belt, and rollers mounted on said frame above and below the axis of said drum, said endless belt being trained over said rollers with its upper run adjacent to and extending around a substantial portion of the circumference of said drum and beneath its axis and serving to prevent cards in said recess from falling out when said drum is rotated upon its axis, said stop members serving as guides to maintain cards filed in said recess in substantially radial position with respect to the axis of said drum with their outer edges extending substantially parallel to said axis.

5. A device for filing cards which comprises a frame, a cylindrical drum, means mounting said drum on said frame for rotation of the drum about its axis, walls extending from the peripheral surface of said drum radially from the axis of said drum in planes substantially perpendicular to said axis, said walls providing an annular recess for receiving cards in a radial position about the periphery of said drum, partition members in said annular recess spaced at intervals around the circumference of said drum, a movable endless belt, a pair of oppositely disposed rollers mounted on said frame above the axis of said drum, a pair of oppositely disposed rollers mounted on said frame beneath the axis of said drum, said endless belt being trained over said rollers with its upper run adjacent to and extending around a substantial portion of the circumference of said drum and beneath its axis and serving to prevent cards in said recess from falling out when said drum is rotated upon its axis and means mounting at least one of said rollers for yieldable movement and yieldable means urging said last mentioned roller in a direction to maintain said belt taut.

6. A device for filing cards or the like which comprises a frame, a cylindrical drum, means mounting said drum on said frame for rotation of the drum about its axis, annular walls extending radially from the peripheral surface of said drum in planes substantially perpendicular to said axis, said walls providing an annular recess for receiving cards in a radial position about the periphery of said drum, partition members in said recess spaced apart around the circumference of said drum, a pair of movable endless belts maintained in parallel spaced relation, rollers mounted on said frame, said pair of endless belts being trained over said rollers and having upper runs adjacent to and extending around a substantial portion of the circumference of said drum and beneath its axis and serving to prevent cards in said recess from falling out when said drum is rotated upon its axis.

7. A device for filing cards or the like which comprises a frame, a cylindrical drum, means mounting said drum on said frame for rotation of the drum about its axis, annular walls extending radially from the peripheral surface of said drum in planes substantially perpendicular to said axis, said walls providing an annular recess for receiving cards in a radial position about the periphery of said drum, partition members in said recess spaced apart around the circumference of said drum, a pair of movable endless belts maintained in parallel spaced relation and each of said belts having an upper run, rollers mounted on said frame, said pair of endless belts being trained over said rollers with their upper runs adjacent to and extending around a substantial portion of the circumference of said drum and beneath its axis and serving to prevent cards in said recess from falling out when said drum is rotated upon its axis, and yieldable means normally urging said belts in a direction to keep them taut.

8. In a device of the character described, a drum of generally cylindrical shape, a frame, means mounting said drum on said frame for rotation of said drum about its axis, radially extending members mounted circumferentially on said drum providing a recess in which to file cards with their inner edges adjacent the peripheral surface of said drum, a plurality of partition members spaced about said drum in said recess and forming compartments, a plurality of movable endless belts, and means mounting said endless belts with one run of each of said belts extending beneath the drum adjacent the compartments formed by the partition, said belts serving to prevent cards in said recess from falling out when said drum is rotated.

9. A rotary card filing device which comprises a drum of generally cylindrical shape, a frame, means mounting said drum on said frame for rotation of said drum about its axis, radially extending members positioned circumferentially on said drum providing a recess, a plurality of partition members in said recess spaced about said drum forming a plurality of compartments on said drum within which to file cards, a movable endless belt, means mounting said endless belt with one of its runs extending beneath the drum and adjacent compartments formed by said partition members.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
994,916	Francis	June 13, 1911
1,475,555	Sargeant	Nov. 27, 1923