July 31, 1951 W. E. ADAMS 2,562,593

FILING APPARATUS

Filed Dec. 29, 1945

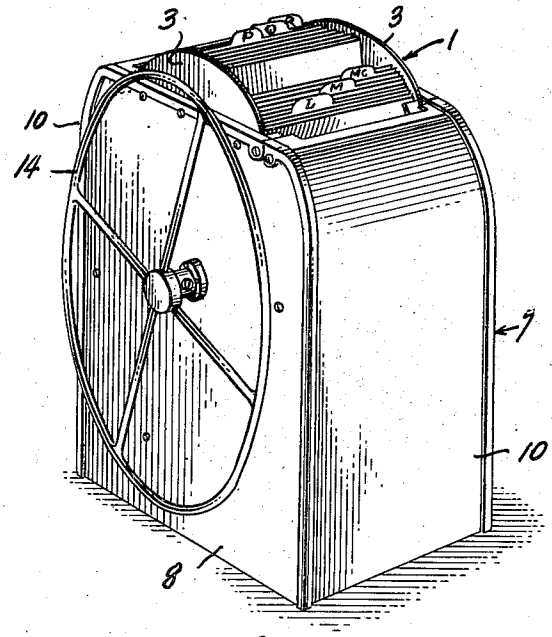


Fig. 1.

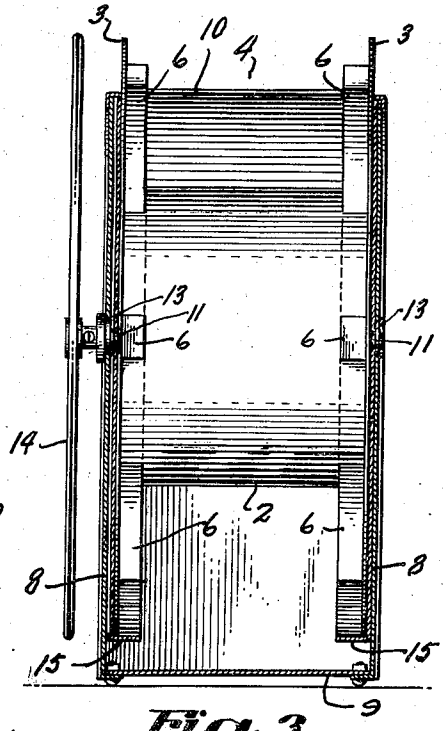


Fig. 3.

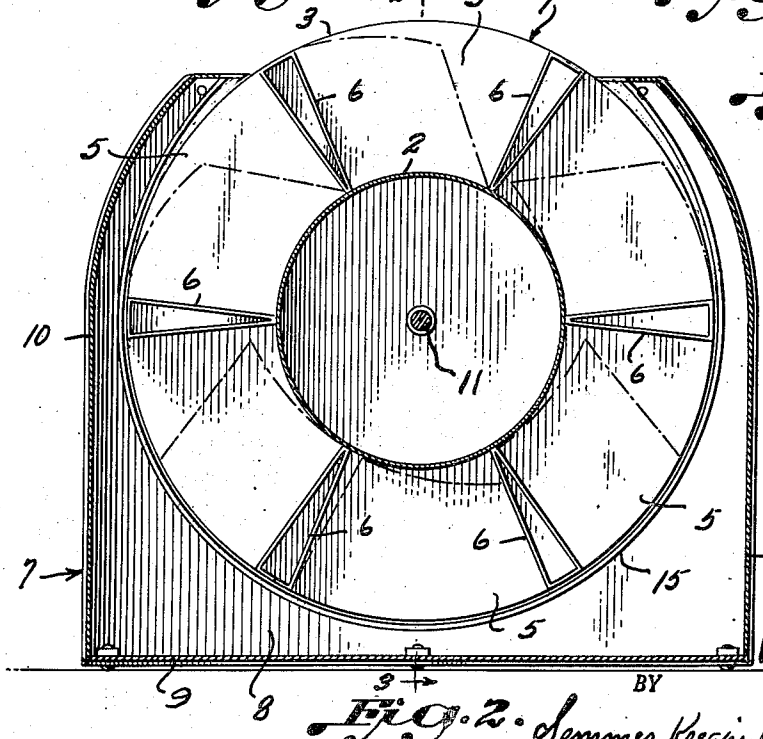
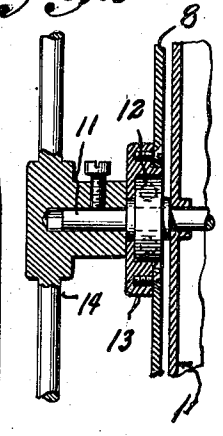


Fig. 2.

Fig. 4.



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FILING APPARATUS

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3 Claims. (Cl. 45—3)

1

The present invention relates to filing apparatus and more particularly filing apparatus in which index cards or the like are mounted for convenient access upon the periphery of a rotatable drum.

Filing apparatus of the above character consists essentially of a suitable supporting structure or case in which a cylindrical drum is rotatably mounted and carrying file cards more or less radially thereon. Various means have been proposed for holding the cards sufficiently loosely on the drum to permit riffling or spreading of the cards for inspection, and yet prevent those on the lower side of the drum falling out. The holding means must also be such as to permit removal or insertion of one or a group of cards for posting or transferring to or from other locations.

The means heretofore proposed for holding the cards on the drum, which will secure the above results, has been a peripheral rail or rails secured to the drum and engaging perforations or key-hole slots in the lower edge of the cards. This, however, is subject to several disadvantages. In the first place, the rail, even in a simple form, is expensive to manufacture. Likewise, a punched or slotted card requires an expensive paper stock and must be accurately cut. Moreover, the punched portion of the card destroys useful surface. Then too, where continuous rails are used with key-hole slotted cards, only one or two may be removed from the rail at a time because of the flexing necessary to disengage the slot from the rail and likewise where apertured cards are threaded on a rail, only a few may be removed from or inserted on the rail at a time.

It is therefore one of the principal objects of this invention to provide an improved rotary card apparatus which is simple and inexpensive to manufacture, is efficient in its operation, and which will overcome some of the disadvantages inherent in those heretofore proposed.

Another object of the invention is to provide a rotary card filing apparatus in which conventional cards may be filed.

Another object of the invention is to provide a rotary card filing apparatus in which the cards are loosely held to permit riffling or separating for easy inspection, but in which, those on the lower side of the holding drum are restrained from falling out.

Another object of the invention is to provide a card filing apparatus of the above character in which circumferential displacement of the cards on a holding drum is substantially prevented and substantial drum balance is maintained.

2

A further object of the invention is to provide a rotary card filing apparatus in which the cards serve to frictionally restrain undesired rotation of the card holding drum.

A still further object of the invention is to provide a file of the above character in which a single card or a substantial number may be removed or inserted as a unitary group without disturbing any of the remaining cards or a manipulating any card securing mechanism.

With these and other important objects and advantages in view, which will become more apparent during the course of the following description, the invention consists in the parts and combination hereinafter set forth with the understanding that various changes may be made therein, such as in the construction and arrangement of parts or by the substitution of equivalents, by those skilled in the art, without departing from the spirit of the invention or exceed the scope of the appended claims.

In order to make the invention more clearly understood, there is illustrated in the accompanying drawings a preferred means for carrying the same into practical effect.

In the drawings:

Figure 1 is a view in perspective of a rotary card filing apparatus constructed in accordance with this invention.

Figure 2 is a transverse sectional view of the apparatus shown in Figure 1.

Figure 3 is a vertical cross section view taken along the line 2—3 of Figure 2 with the card carrying drum being shown in elevation.

Figure 4 is a detail sectional view of one of the drum bearings and its associated parts.

Generally the invention comprises a cylindrical drum rotatable about a horizontal axis and having radial end flanges which form a peripheral channel for the reception of file cards. Cards are prevented from falling out on the lower half of the drum by engagement, at opposite corners of the cards, with relatively fixed retaining strips respectively overlapping laterally the drum flanges and surrounding the same except for a space at the top of the drum. The inner faces of the drum flanges have secured respectively thereto opposed, wedge shaped dividing fins which separate the cards carried by the drum into a series of segregated groups, and restrict relative rotation of the whole group of cards with respect to the drum. The cards on the lower sector of the drum, engaging the retaining strips, serve as a friction brake element to restrain undesired rotation of the drum.

Referring more particularly to the specific form of file illustrated, there is provided a card carrying drum 1 comprising a central cylindrical hub 2 having opposed radial end flanges 3 secured thereto and forming, with the hub, a rectangular peripheral channel 4. This channel is divided into a circumferential series of wedge shaped card carrying sections or segments 5 by means of wedge shaped dividing fins 6 secured directly opposite each other respectively to the inner faces of the flanges 3. Preferably these fins or dividers are strips of metal bent into the form of a substantially short base isosceles triangle with its apex abutting the hub 2, its base lying substantially flush with the rim of the flange 3 and its vertical radial to the axis of the drum.

The drum 1 is adapted for rotation in a supporting structure or case, designated generally as 7, and comprising opposed vertical side plates 8 held in spaced parallel relation to each other by means of a bottom plate 9, secured to the respective bottom edge of the side plates, and opposed end plates 10 which are secured respectively to corresponding vertical edges of the side plates. To top of the case thus formed is left open for access to the cards, as will be described.

The drum 1 is rotatably mounted in the case or support 7 by means of a shaft 11 carried axially by the drum and extending from opposite sides thereof, preferably for rotation with the drum. The extended ends of the shaft 11 are journaled respectively in a pair of axially aligned anti-friction bearings 12 suitably secured respectively to the side plates 8 such as by means of flanged sleeves 13 secured in apertures provided therefor in the side plates. The bearings 12 are positioned so that the upper portion of the drum projects through the open top of the casing. The upper portion of the end plates 10 preferably converge toward each other on arcs substantially concentric with the drum.

One end of the shaft 11 may, if desired, project through its bearing and have secured thereto a hand wheel 14 by means of which the drum may be rotated in either direction.

Conventional filing cards with indexing dividers if desired—are placed in the segments 5 of the channel 4 between the dividing fins 6. The maximum number of cards for each section is preferably a stack which will loosely fill the narrower or base portion of the segment 5 to permit the cards to slide more or less freely inwardly and outwardly with respect to the drum axis. In order to prevent the cards from falling out of the lower half of the drum, there are provided a pair of arcuate retaining strips 15 which engage opposite outer corners of the cards in the lower section of the drum. These strips 15 are respectively secured to the inner faces of the side plates 8, perpendicular thereto. The strips 15 have widths such as to slightly overlie the flanges 3 and the ends of the cards without interfering with index tabs, should any of the cards have such.

The card retaining strips 15 form an important feature of this invention and serve, by engagement with the cards, not only to prevent these falling out of the drum, but serve also by such engagement to frictionally restrain rotation of the drum to a degree that undesired rotation due to an unbalanced drum and the drum rocking to a stop is effectively inhibited, and also serve to maintain the cards evenly stacked in the drum sectors.

As best seen in Figure 2, the intermediate section of the strips 15, preferably that portion lying

below a horizontal plane passing through the axis of the drum, is bent on an arc substantially concentric with the drum and radially spaced slightly outwardly from the peripheries of the flanges 3. From said horizontal plane and upwardly to their points of termination adjacent the upper edges of the side plates at the juncture thereof with the end plates, the end portions of the strips 15 diverge gradually on progressively increasing radii away from the peripheries of the flanges 3. With the strips 15 so curved and spaced with relation to the drum, it will be understood that the cards on the descending side of the rotating drum, as soon as the trailing side of the leading fin 6 passes below the horizontal plane, will gradually move into contact with the strips 15 until at the bottom of the drum, the weight of the cards in the lower segment will rest on these strips. As the drum continues to rotate and the cards pass above the horizontal plane they gradually move out of contact with the retaining strips. These strips 15 serve two purposes: First, they serve, by engaging the edges of the cards, as a friction brake for the drum. Secondly, on the descending side of the wheel, they force any raised cards into alignment with the stack and against the hub 2 of the drum, and on the ascending side of the wheel, maintain the evenly stacked position of the cards to prevent any being caught against the open edge of the casing. It will be noted also that the triangular shape of the dividing fins 6 provides that the cards will not assume a horizontal position on the descending side of the drum until after they have passed below the horizontal plane of the axis of revolution of the drum and thereby prevent the cards tumbling or turning over in the segments 5.

The operation of the file, it is believed, will be apparent from the foregoing description. It might be pointed out, however, that the operator rotates the drum 1 by means of the hand wheel 14 until the desired card carrying segment or section of the drum arrives at a position registering with the opening of the case 7. The friction provided between the cards in the lower half of the drum and the retaining strips 15 will hold the drum in this adjusted position permitting the operator to employ both hands in finding the particular card he desires for inspection or removal. It might be pointed out that a file constructed in accordance with the foregoing disclosure, makes it possible for the operator to take a single card from the file or an entire stack, if desired. The construction also permits the transfer of ordinary file cards from a file drawer or cabinet, for instance, to the rotary file without any modification to the card such as punching, slotting or notching, which would otherwise be the case in using ordinary cards with the rotary files of this character heretofore proposed. This is an important advantage in that cards made from a much cheaper paper stock may be used. The invention also provides that much faster filing operations can be accomplished because of the fact that the cards at the access portion of the file are not secured to the drum and may be simply lifted out and replaced.

I claim:

1. In a card filing apparatus of the character described a cylindrical drum rotatable about a horizontal axis and having a substantially rectangular peripheral channel therein for the reception of file cards, fixed strip means partially surrounding the respective ends of the drum and overlying opposite sides of the channel for en-

gaging opposite corners of the cards therein to restrain outward movement of the cards from the channel, and a series of opposed pairs of wedge shaped fin members carried respectively by opposite side walls of the channel dividing the same into a series of wedge shaped segments, there being substantial spacing between the fin members of each pair.

2. Apparatus according to claim 1 in which the mid-section of said strips is concentric with the lower half of the said drum, the end sections of the strips diverge gradually away from the periphery of the drum and each fin member is an isosceles triangle with the apex thereof abutting the bottom wall of said channel, the base lying substantially flushed with the periphery of the drum, the said triangular fin members being positioned so that a radial plane passing through the axis of rotation of the drum bisects the triangle.

3. Apparatus according to claim 1 which includes a case having opposed side walls and end walls and an open top, the said side walls being provided with bearings arranged for journaling the drum for rotation in the case about a horizontal axis with the upper sector of the drum projecting through said open top, the strip members being carried respectively by the inner surfaces of said side walls, the mid-section of the said strips being concentric at least the lower sector of the drum and the end sections of said strip diverging gradually away from the periphery of the drum and terminating adjacent the upper edges of the end walls at said open top.

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