Feb. 11, 1941. R. P. SCHOLFIELD 2,231,029

FILING APPARATUS

Filed April 22, 1936 3 Sheets-Sheet 1

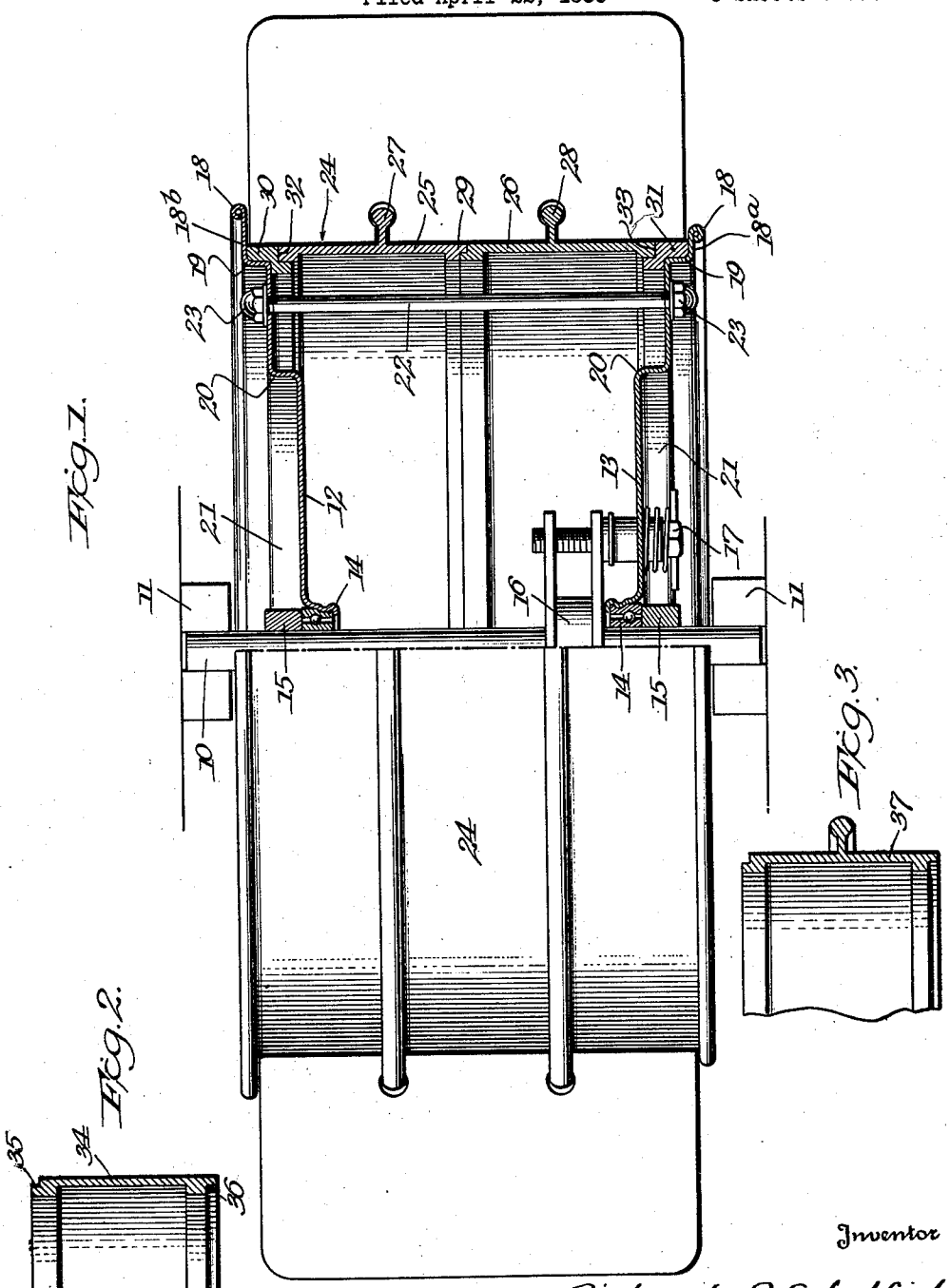


Fig. 1.

Fig. 3.

Fig. 2.

Inventor

Richard P. Scholfield.

By Coolman, Darby, & Cushman

Attorneys

Feb. 11, 1941. R. P. SCHOLFIELD 2,231,029

FILING APPARATUS

Filed April 22, 1936 3 Sheets-Sheet 2

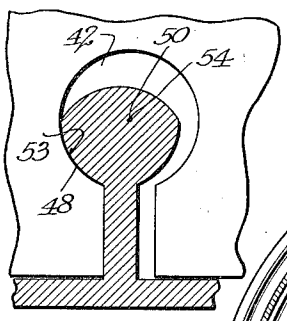


Fig. 5a.

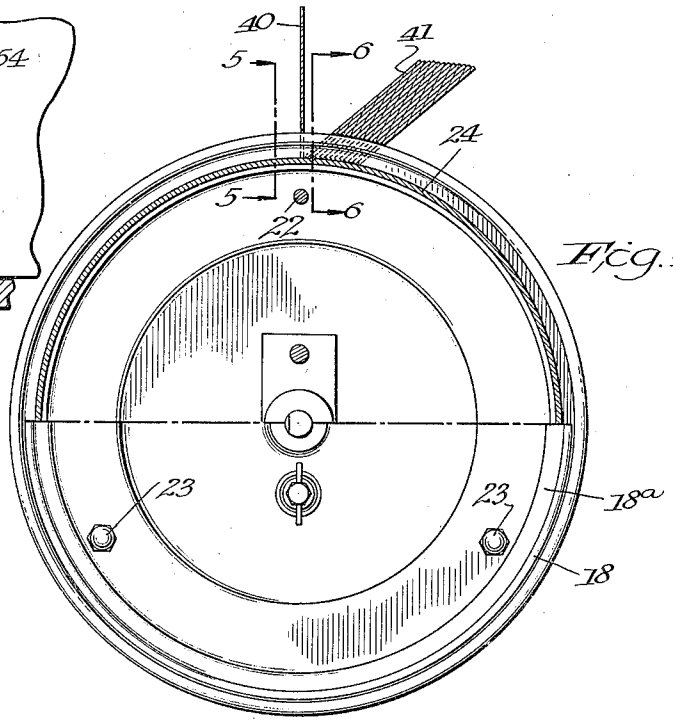


Fig. 4.

Fig. 5.

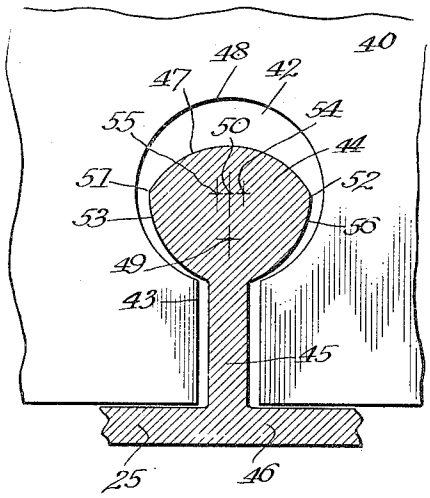
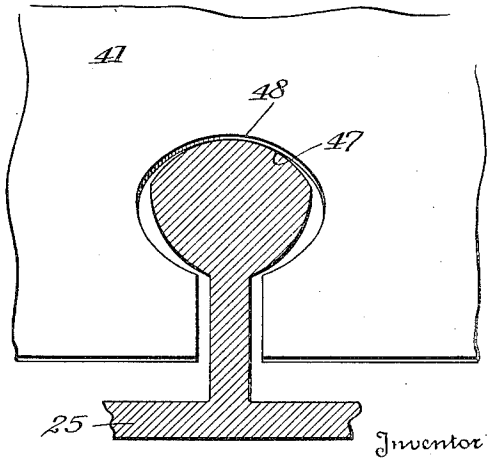


Fig. 6.



Inventor

Richard P. Scholfield.

By Lenderman, Worley, Lenderman

Attorneys

Feb. 11, 1941. R. P. SCHOLFIELD 2,231,029

FILING APPARATUS

Filed April 22, 1936 3 Sheets-Sheet 3

Fig. 7.

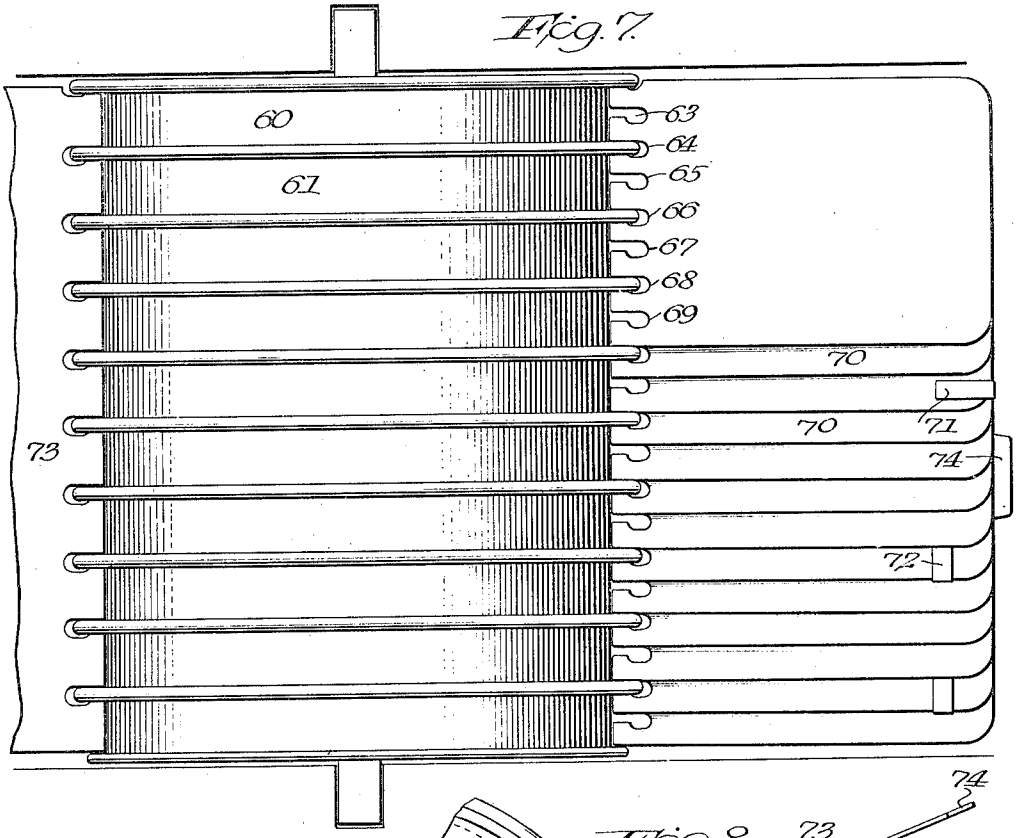


Fig. 9.

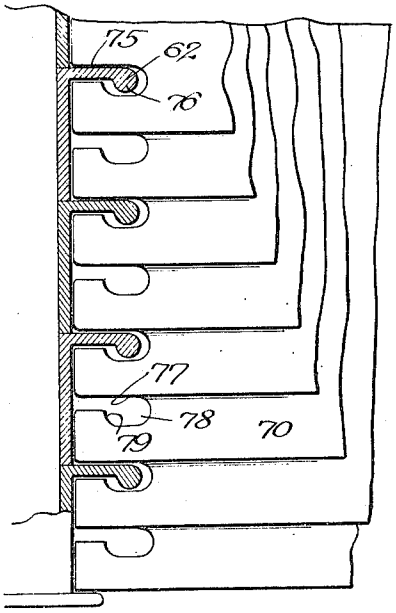
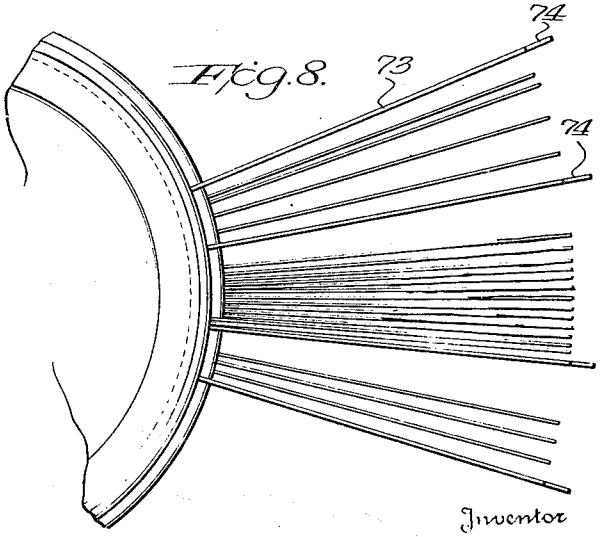


Fig. 8.



Inventor

Richard P. Scholfield

By Lauhman, Darby & Lauhman

Attorneys

Patented Feb. 11, 1941 2,231,029

UNITED STATES PATENT OFFICE

2,231,029

FILING APPARATUS

Richard P. Scholfield, Waterford, Conn., assignor to Scholfield Service, Inc., New York, N. Y., a corporation of New York

Application April 22, 1936, Serial No. 75,883

27 Claims. (Cl. 129—16)

This invention relates to rotatable filing apparatus of the general class shown in the patent to Scholfield et al., No. 2,046,655, dated July 7, 1936. More particularly the invention relates to specific improvements in drum structures which may be used in such apparatus as is disclosed and claimed in my copending application Serial No. 67,710, filed March 7, 1936.

It is an object of the present invention to provide rotatable filing drums, the parts of which are simplified and standardized. Such drums may be manufactured more economically, and several different sizes and types may be assembled from a standard set of parts.

It is a further object of the invention to improve the means for retaining the filing cards on the periphery of the drum, and, to this end, the invention contemplates a plurality of novel types of card retaining ribs or rails, and a plurality of novel types of cards, specially constructed to cooperate with the ribs in a new and more efficient manner.

It is a further object of the invention to provide, in a rotatable filing apparatus, a "visible" type of filing system, wherein a plurality of sets or series of cards are provided, and each card of a set or series has a portion which is exposed, or is visible, above or below the cards positioned in front thereof. As far as I am aware, it has never been proposed, prior to the present invention, to arrange a plurality of cards on the periphery of a rotatable filing drum in such a manner that portions of each card of a set or series are exposed to view beneath or above adjacent cards.

The invention also contemplates certain novel arrangements of parts and details of construction, as hereinafter specifically described.

In the accompanying drawings,

Figure 1 is a top plan view, partly in horizontal section, showing one form of filing drum of the present invention.

Figure 2 is a fragmentary sectional view of a spacer ring or section which may be used with the drum of Figure 1, to change the dimension thereof.

Figure 3 is a corresponding view of another type of spacer ring or section.

Figure 4 is an end view, partly in section and partly in elevation, of the filing drum of Figure 1, on a reduced scale.

Figures 5 and 6 are enlarged sectional views taken on lines 5—5 and 6—6 of Figure 4, respectively.

Figure 5a is a view similar to Figure 5, with the card in a slightly different position.

Figure 7 is a top plan view of a modified form of filing drum, with one set or series of cards shown arranged in staggered relation thereon.

Figure 8 is a fragmentary end elevational view of a drum of the type shown in Figure 7, with a few additional cards thereon.

Figure 9 is a fragmentary sectional view taken on an axial plane of Figure 7.

The drum is preferably journaled for rotation upon a shaft 10 non-rotatably supported in sockets or brackets 11, mounted in any preferred type of cabinet, for instance such as those shown in my copending application Serial No. 67,710. In such case the stub axle 10 will be positioned either horizontally, or on a slight inclination from the horizontal, and on a line extending generally toward the operator, but possibly inclined to the front edge of the desk, table or cabinet, for the purposes described in the copending application.

The drum comprises a pair of spaced apart heads 12, 13 having ball bearings 14 adjacent the centers thereof. Collars 15 which may be positioned on the shaft 10 by set screws or the like, restrain endwise movement of the drum on the shaft. A one-way brake 16, which may be of the type shown in the Scholfield et al. patent referred to above, is associated with the drum, and the control means 17 adapted to adjust the resistance of the brake extend through appropriate apertures in one of the drum heads 13.

The drum heads may be provided with beaded peripheries 18 and, inwardly thereof, with shouldered portions 19 adapted to receive the rim of the drum, as hereinafter described. Inwardly of the shoulder 19, each of the drum heads is preferably provided with an additional shouldered portion 20, to provide a dished-in space 21, which provides sufficient room for the brake adjusting means 17, so that the same does not project outwardly beyond the axial length of the drum as defined by the beaded edges 18. The two shoulders 19, 20 also serve to impart additional strength to the drum heads.

The heads may be drawn together in any appropriate manner to clamp the rim therebetween, and in the embodiment disclosed I provide pins or bolts 22 provided with nuts 23, threaded on their ends.

It should be noted that the drum head 13 is of less diameter than the drum head 12. The flange 18a extending outwardly from its shoulder 19 to the bead 18, is shorter than the flange 18b on

head 12. It is desirable to provide this short flange on the drum head positioned directly in front of the operator, to facilitate the entry of the operator's hand into the space between the cards, for the posting of entries on the cards.

The rim 24 is preferably sectional in character. As shown in Figure 1, two intermediate sections 25, 26 provided with card retaining ribs or rails 27, 28, are joined together by a rabbeted point 29. Additional end spacer sections 30, 31 are rabbeted to the outer ends of the intermediate sections as at 32, 33. These parts preferably are made of cast aluminum, or the like, and are then machined to exact size so that the parts have a nice fit and so that the card retaining rails have a definite cross sectional shape, as explained below.

The axial dimension of the drum, and the space between the card retaining rails and the spacing of the rails from the ends of the drum, may be varied, by the use of supplemental rim sections. For instance, a center section 34, as shown in Figure 2, may be interposed at the joint 29 between the sections 25, 26. The edges of the section 34, as at 35, 36, are rabbeted in a manner corresponding to the sections 25, 26 so that, when the section 34 is inserted, the parts have the same accurate fit.

Moreover, if desired, an additional section 37, as shown in Figure 3, may be utilized, at one end of the other sections, or in between the sections, in order to provide a drum having three or more card retaining ribs or rails. Furthermore, the end sections 30, 31 may be dispensed with entirely, or similar sections of different dimension substituted, if it is desired to vary the distance between the card retaining ribs and the drum heads.

As stated above, the present invention contemplates novel forms of card retaining ribs, cooperating with novel forms of cards to produce new and unexpected results. Referring to Figures 5 and 6, a preferred form of rib is shown in operative relation with a novel form of card. As indicated in Figure 4, the cards normally assume either one or another of two definite positions on the drum, namely a radial or vertical position as indicated by the card 40, or a rearwardly inclined position as indicated by the card 41. The card is provided with a circular aperture 42 spaced from the lower edge thereof, communicating with the lower edge by a parallel-sided slot 43. The rib or rail comprises a head 44 and a web 45, which serves as a means for supporting and spacing the head from the base 46, which may be the peripheral portion of the rim section 25, 26, or 37. The head 44 is of smaller cross sectional area than the aperture 42, so that the cards may slide on the rail and pivot thereon from a vertical to an inclined position. The edges of the head 44, or, in other words, its cross sectional margins, are disposed on arcuate curves of the same radii as the circle defining the aperture 42. More particularly, the arcuate curve 47 of the upper surface of the rib has the same radius as the marginal portion 48 of the aperture 42, but the edge 47 is struck about the center point 49, whereas the margin of the aperture 42 is struck about the center 50.

The undersurfaces of the head 44, that is to say, the surfaces extending from the web 45 to the points of juncture 51, 52 with the upper surface, are likewise disposed on arcs of radii equal in length to the radii of the upper surface 47 and the margin 48 of operture 42. The arcuate surface 53, however, is struck about a center 54 offset from the center 50 and from the center 55, about which the opposite arcuate inner edge 56 is struck.

The slot 43 is wider than the web 45, by an amount equal to the distance between the centers 54, 55.

As a result of this construction, the cards may tip backwardly as indicated in Figure 6, and the arcuate edge 48 of the aperture 42 will then register with the upper arcuate edge 47 of the rail, over a substantial line contact, because, as stated above, both of these edges are struck on equal curves.

When the cards are upright, and particularly when the drum is mounted on an inclined axis, the weight of the cards will tend to cause them to slide, lengthwise of the drum, to one extreme as indicated in Figure 5a. In such a case, the surface 53 of the rib will exactly match the adjacent portion of the aperture of the card, and the card and rib will abut along a line contact of substantial length. In such a case, the sliding of the card results in shifting the center 50 of the aperture 42 laterally until it coincides with the center 54 of the arcuate curve 53. Thus, the arcs of the two edges coincides.

This novel construction of rib and aperture serves to effect a definite positioning of the cards on the rib, prevents wobbling of the cards and reduces the likelihood of wear along the margins of the apertures in the cards, such as would result if there were a mere point contact between the cards and ribs.

The form of the invention shown in Figures 7 to 9 inclusive has many features in common with the form shown in Figures 1 to 6, and consequently only the features of the drum which differ from the first form have been shown in detail. The sections of the drum may be rabbeted, as indicated in Figure 1, or they may simply abut one another in end to end relation as indicated in Figure 9.

The drum comprises a plurality of sections 60, 61, etc., each provided with an outwardly projecting circumferential rib or rail 62. When assembled, the drum therefore comprises a plurality, for instance 10, of the card retaining ribs, equally spaced apart a predetermined distance.

The cards are each provided with a plurality of apertures 63, 64, 65, 66, 67, 68, 69. It should be noted that these apertures are more closely spaced than the ribs, and in the specific embodiment disclosed, they are spaced one-half the distance of the spacing of the ribs. Of course, the invention is not limited to this particular distance of the spacing, as any arrangement of the ribs and slots adapted to perform the same function is within the scope of the present invention.

As a result of making the cards considerably shorter than the axial length of the drum and providing a great plurality of ribs on the periphery of the drum, the cards may be arranged in staggered relation to each other in a plurality of series on the drum. Thus, a portion 70 of each card is exposed below or above the cards positioned in front thereof. This portion 70 serves as a convenient space for posting the name or index character of the card, to facilitate its prompt location. Also, appropriate indicating tabs 71, 72, or the like, may be attached to the exposed portion of certain cards for the usual purpose. Spacer cards 73, extending the full length of the drum, may be inserted between the different sets or series of cards. The spacers 73 may be provided with projecting tabs 74

carrying an index letter, to indicate the character of the cards positioned adjacent thereto.

The card retaining ribs in this form of the invention may be of the type shown in Figures 5 and 6, and in such case, the cards should be punched in a similar manner. However, a form of rib and punched card as shown in Figure 9 may be used. Each rib 62 of this type comprises a flat side 75 and a rounded overhanging projection 76. The cards are provided with slots having flat sides 77 and enlarged portions 78. The cooperation between the portion 76 of the rail and the inwardly projecting end 79 of the enlargement 78 prevents the cards from being accidentally removed from the drum. The flat side 75 cooperates with the straight marginal portion 77 of the aperture definitely to position the card on the drum. Moreover, these flat surfaces facilitate removal of the cards from the drum by, for instance, grasping the right-hand corner of the upper card shown on the right side of Figure 7, and pulling the same, with a turning movement downwardly and inwardly. The bending of a card and the turning movement imparted thereto permit the flat sides to slide apart, and cause the hooked ends 79 to swing out of engagement with the enlargement 76.

It is of considerable advantage to have the drum assembled from a plurality of similar annular sections, when the cards are to be arranged thereon in staggered relation. By increasing or decreasing the number of sections, and thereby increasing or decreasing the number of card retaining ribs on the drum, the number of staggered cards which may be included in each set or series of cards may be increased or decreased. In the arrangement shown in Figures 7 to 9 of the accompanying drawings, the addition of a single section makes it possible to add two more cards in each set or series. Thus, if there are fifty individual sets of staggered cards on the drum, the addition of a single section permits the drum to carry one hundred additional cards in staggered relation. This results in the fact that each card may cooperate with its retaining rings in one of two different ways. For instance, the top card shown in Figure 7 engages its retaining rings by means of its lots 64, 66, and 68. In the position shown, the slots 63, 65, 67, 69 are inoperative. They would be used, however, if it were desired to shift the card a distance equal to one-half the distance between the card retaining ribs on the drum and in such case they would constitute means for securing the card to the rails in the second position.

It must be understood that the accompanying drawings and the foregoing description are for purposes of illustration only and are not restrictive of the invention. Any similar devices falling within the scope of the accompanying claims, or their equivalents, must be considered to be within the scope of the invention.

I claim:

1. A rotatable filing drum comprising a pair of spaced drum heads, a substantially cylindrical rim disposed between said heads, and means for drawing the heads together to clamp the rim therebetween, said rim comprising a plurality of readily separable, coaxially arranged annular sections, at least one of said annular sections having a card retaining rib upon its periphery.

2. A rotatable filing drum comprising a pair of spaced drum heads, a substantially cylindrical rim disposed between said heads, and means for drawing the heads together to clamp the rim therebetween, said rim comprising a pair of readily separable coaxially arranged annular sections, each having a card retaining rib upon its periphery.

3. A rotatable filing drum comprising a pair of spaced drum heads, a substantially cylindrical rim disposed between said heads, and means for drawing the heads together to clamp the rim therebetween, said rim comprising a pair of readily separable coaxially aligned annular sections having card retaining ribs thereon, and an annular spacer section.

4. A rotatable filing drum comprising a pair of spaced drum heads, a substantially cylindrical rim disposed between said heads, and means for drawing the heads together to clamp the rim therebetween, said rim comprising a pair of readily separable coaxially aligned annular sections having card retaining ribs thereon, and a pair of annular end spacer sections.

5. A rotatable filing drum comprising a pair of spaced drum heads, a substantially cylindrical rim disposed between said heads, and means for drawing the heads together to clamp the rim therebetween, said rim comprising a plurality of readily separable coaxially aligned sections having a rabbetted joint at their adjacent meeting ends.

6. A rotatable filing drum comprising a pair of spaced drum heads, a substantially cylindrical rim disposed between said heads, and means for drawing the heads together to clamp the rim therebetween, said rim comprising a pair of annular end sections mounted on said heads and a pair of intermediate card carrying sections rabbetted to said end sections and to each other and being readily separable.

7. A rotatable filing drum comprising a pair of spaced drum heads, a substantially cylindrical rim disposed between said heads, and means for drawing the heads together to clamp the rim therebetween, said rim comprising a plurality of readily separable coaxially arranged interchangeable annular sections of varying axial length, certain of said annular sections being provided with card carrying ribs and other of said sections having substantially smooth peripheral portions and serving as spacer rings to vary the relative position of said ribs to each other and to said heads.

8. A rotary filing drum having a card retaining rib associated with its rim, said rib being of non-circular cross section and having its cross-sectional margins disposed on arcuate curves of equal radius struck about different centers.

9. A rotary filing drum having a card retaining rib associated with its rim, said rib having its cross sectional margins on arcuate curves of equal radius but struck about different centers, the center for the curve of the outer margin of the rib being disposed inwardly of the center for the curve of at least a portion of the inner margin of the rib.

10. A rotary filing drum having a card retaining rib associated with its rim, said rib being symmetrical on opposite sides of a plane perpendicular to the axis of the drum bisecting the rib, said rib having its cross-sectional margins on arcuate curves of equal radius but struck about different centers, the radius of the curve of one inner side margin being extended through

said plane to a center spaced from said plane.

11. A rotary filing drum having a card retaining rib associated with its rim, said rib being symmetrical on opposite sides of a plane perpendicular to the axis of the drum bisecting the rib, said rib having its cross-sectional margins on arcuate curves of equal radius but struck about different centers, the centers for the curves of the inner side margins being spaced from and disposed respectively on the opposite sides of said plane.

12. A rotary filing drum having a card retaining rib associated with its rim, said rib being symmetrical on opposite sides of a plane perpendicular to the axis of the drum bisecting the rib and having its cross-sectional margins on arcuate curves of equal radius struck about different centers, the center for the curve of the outer margin of the rib being disposed on said plane and radially inwardly of the centers for the curves of the inner margins of the rib, said last named centers being spaced from and respectively on the opposite sides of said bisecting plane.

13. A rotary filing drum having a card retaining rib associated with its rim, said rib comprising an outwardly projecting annular flange having parallel side faces and an enlargement or bead outwardly thereof, said bead being of non-circular cross section and having its cross-sectional margins disposed on arcuate curves of equal radius struck about spaced center points.

14. The combination of a card retaining rail and a card adapted to be retained thereon in a perpendicular position and in an inclined position, said card having a circular aperture spaced from an edge thereof and a slot extending from the aperture to said edge, said rail comprising a head of smaller cross-sectional area than said aperture and having its edges disposed on arcuate curves of radii substantially equal to the radius of said circular aperture, whereby certain portions of the margins of said aperture make a line contact of substantial length with adjacent edges of said rail in the different positions of said card.

15. The combination of a card retaining rail and a card adapted to be held thereon in a vertical position and in a rearwardly inclined position, said card having a circular aperture spaced upwardly from the lower edge thereof and a parallel-sided slot extending from the lower portion of the aperture to said lower edge, said rail comprising a web of substantially the height of said slot and a head of smaller cross-sectional area than said aperture, said head having its edges disposed on arcuate curves of radii substantially equal to the radius of said circular aperture but struck about different centers, whereby portions of the margins of said aperture when in contact with adjacent portions of the rail will make a line contact therewith of substantial length.

16. In a filing apparatus, the combination of a rotatable filing drum, a rail disposed circumferentially of the drum, and a filing card adapted to be retained thereon, said card having an aperture therein defined by a circular margin, said rail being of less cross-sectional area than said aperture, whereby the card is free to slide and to pivot on the rail, said rail having three distinct surfaces, all curved in cross-section on arcs of radii equal in length to the radius of the curve of said circular margin of the aperture whereby when said card assumes any one of three different normal positions with respect to said rail, one of said surfaces on said rail will engage the margins of said aperture with a line contact of substantial length.

17. In a filing apparatus, the combination of a rail and a filing card adapted to be retained thereon, said card having a circular aperture therein spaced from the lower edge of the card and communicating therewith by a slot, said rail comprising a head and means for supporting and spacing said head from a base, the upper surface of the head, in cross section, being disposed on an arc of equal radius to the radius of said aperture, a portion of the lower surface of the head, in cross section, from a point adjacent said means to the juncture with the upper surface being disposed on an arc of a radius equal to the radius of said upper head surface but different center.

18. In a filing apparatus, the combination of a rail and filing card adapted to be retained thereon, said card having a circular aperture therein spaced from the lower edge of the card and communicating therewith by a slot, said rail comprising a head and means for supporting and spacing said head from a base, the upper surface of the head, in cross section, being disposed on an arc of equal radius to the radius of said aperture, the lower surfaces of the head, in cross section, from points adjacent and on opposite sides of said means to their junctures with the upper surface being disposed on arcs of radii equal to the radius of said upper head surface but struck from different centers.

19. Filing apparatus comprising a rotatable card carrying drum having a plurality of circumferential card carrying ribs or rails on the periphery thereof, and a plurality of filing cards each having spaced slots similarly positioned adjacent one edge, said edge being of lesser length than the axial length of the drum, whereby a series of cards may be arranged in staggered relation on said drum to expose a portion of each card of the series above or below the one positioned in front thereof, each of said rails being adapted to engage a differently positioned slot on each of a plurality of said cards of the series.

20. Filing apparatus comprising a rotatable card carrying drum having a plurality of spaced card carrying ribs or rails circumferentially disposed on the periphery thereof, a plurality of sets or series of filing cards, each of said cards having similarly spaced slots adjacent one edge, said edge being of lesser length than the axial length of the drum, whereby the individual cards of each set or series may have different slots engaging different ribs or rails to effect a staggered relation of the cards on said drum to expose a portion of each card of the set or series above or below the one positioned in front thereof, and a spacer card between each set or series of staggered filing cards extending the full length of said drum and having slots adjacent one edge engaging ribs or rails on the drum.

21. Filing apparatus comprising a rotatable card carrying drum having a plurality of circumferential card carrying rails equally spaced apart a predetermined distance on the periphery thereof, and a plurality of filing cards, each having a plurality of equally spaced slots adjacent one edge thereof, spaced apart a distance which is evenly divisible into the distance of spacing of said rails, said edge of each of said cards being of lesser length than the axial length of said drum whereby a series of cards may be arranged in staggered relation on said drum to expose a

portion of each card of the series above or below the one positioned in front thereof, the spacing of said slots on the card serving to permit the card to be positioned upon its card carrying rails in a plurality of different relations to effect the desired staggered relation with respect to adjacent cards.

22. Filing apparatus comprising a rotatable card carrying drum having a plurality of circumferential card carrying ribs on its periphery and a filing card having a plurality of slots adjacent one edge adapted to cooperate with said ribs, said ribs each having a flat side disposed on a plane perpendicular to the axis of the drum and an opposite side provided with a rounded overhanging projection, each slot on said card having a straight sided margin adapted to register with the flat side of said rib and a laterally extending enlargement adapted to receive the rounded projection of said rib, said enlargement being of greater dimension, radially of the drum, than the projection.

23. Filing apparatus comprising a rotatable card carrying drum having a rim provided with a plurality of circumferential card carrying ribs or rails, said rim comprising a plurality of annular sections assembled in end to end relation, each section comprising a base portion and an upstanding rib or rail, said drum carrying a plurality of sets or series of cards on its periphery, the cards of each set or series being arranged in staggered relation lengthwise of the drum and engaging different ribs or rails, the sectional character of said drum serving to permit changes in the length of the drum by the addition or subtraction of additional sections, thereby increasing or decreasing the number of staggered cards which may be included in each set or series of cards.

24. Filing apparatus comprising a rotatable card carrying drum having a rim provided with a plurality of circumferential card carrying ribs or rails, said rim comprising a plurality of annular sections assembled in end to end relation, each section comprising a base portion and an integral upstanding rib or rail at one end of said base portion, said drum carrying a plurality of sets or series of cards on its periphery, the cards of each set or series being arranged in staggered relation lengthwise of the drum and engaging different ribs or rails, the sectional character of said drum serving to permit changes in the length of the drum by the addition or subtraction of additional sections, thereby increasing or decreasing the number of staggered cards which may be included in each set or series of cards.

25. A rotary filing drum having a card-retaining rail associated with its rim, said rail comprising a web connected to the rim and a head of greater width measured axially of the drum than height measured radially of the drum, said head being non-circular in cross-section but having curved cross-sectional margins.

26. A rotary filing drum having a card-retaining rail associated with its rim, said rail comprising a web connected to the rim and a head of greater width measured axially of the drum than height measured radially of the drum, said head being non-circular in cross-section but having certain of its cross-sectional margins disposed on arcuate curves.

27. A rotary filing drum having a card-retaining rail associated with its rim, said rail comprising a web connected to the rim and a head of greater width measured axially of the drum than height measured radially of the drum, said head being non-circular in cross-section but having certain of its cross-sectional margins disposed on arcuate curves of equal radius struck about different centers.

RICHARD P. SCHOLFIELD.