

March 7, 1944.

W. W. CORY

2,343,280

ROTARY INDEX FILE

Filed Jan. 23, 1942

3 Sheets-Sheet 1

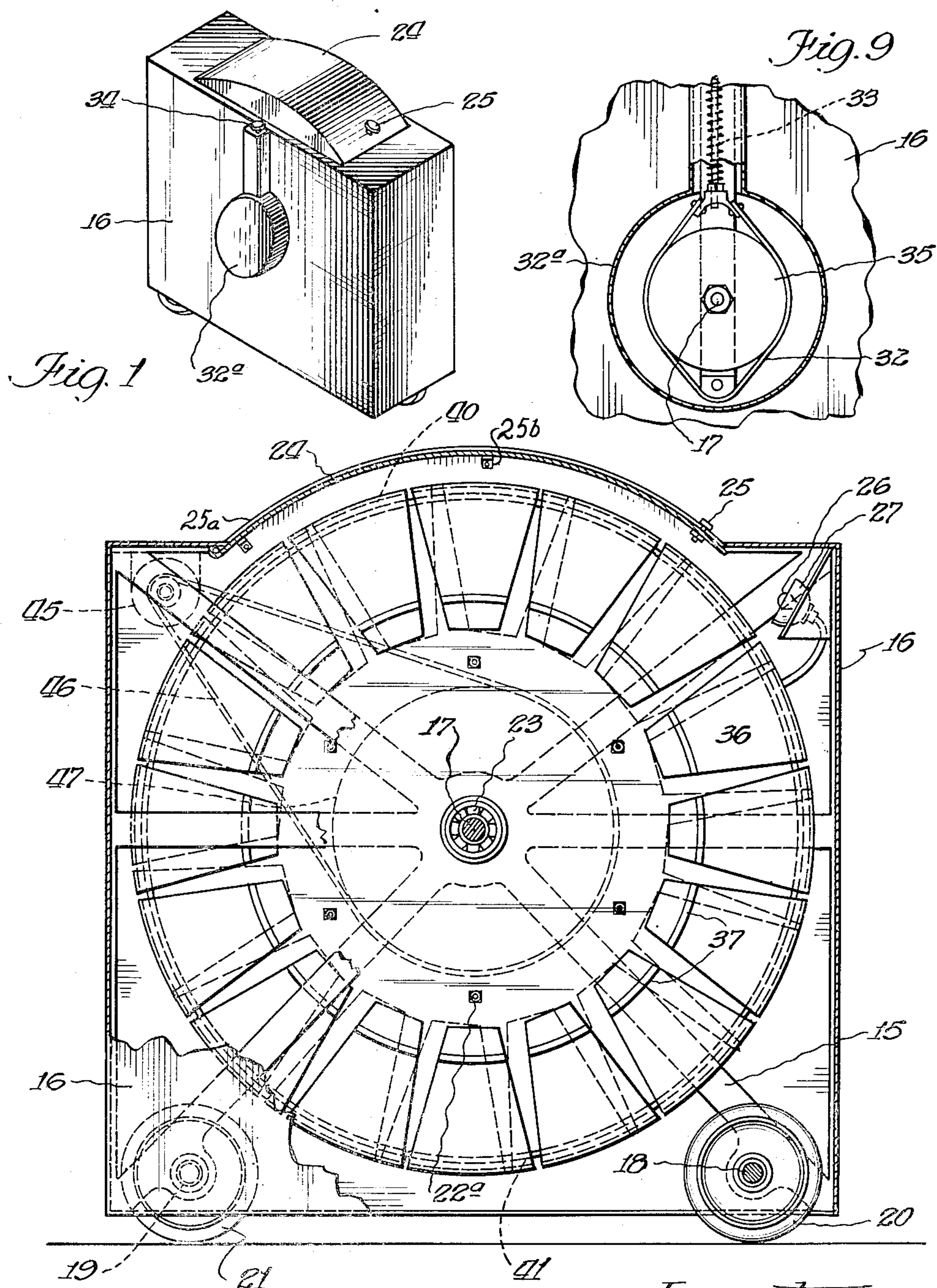


Fig. 2

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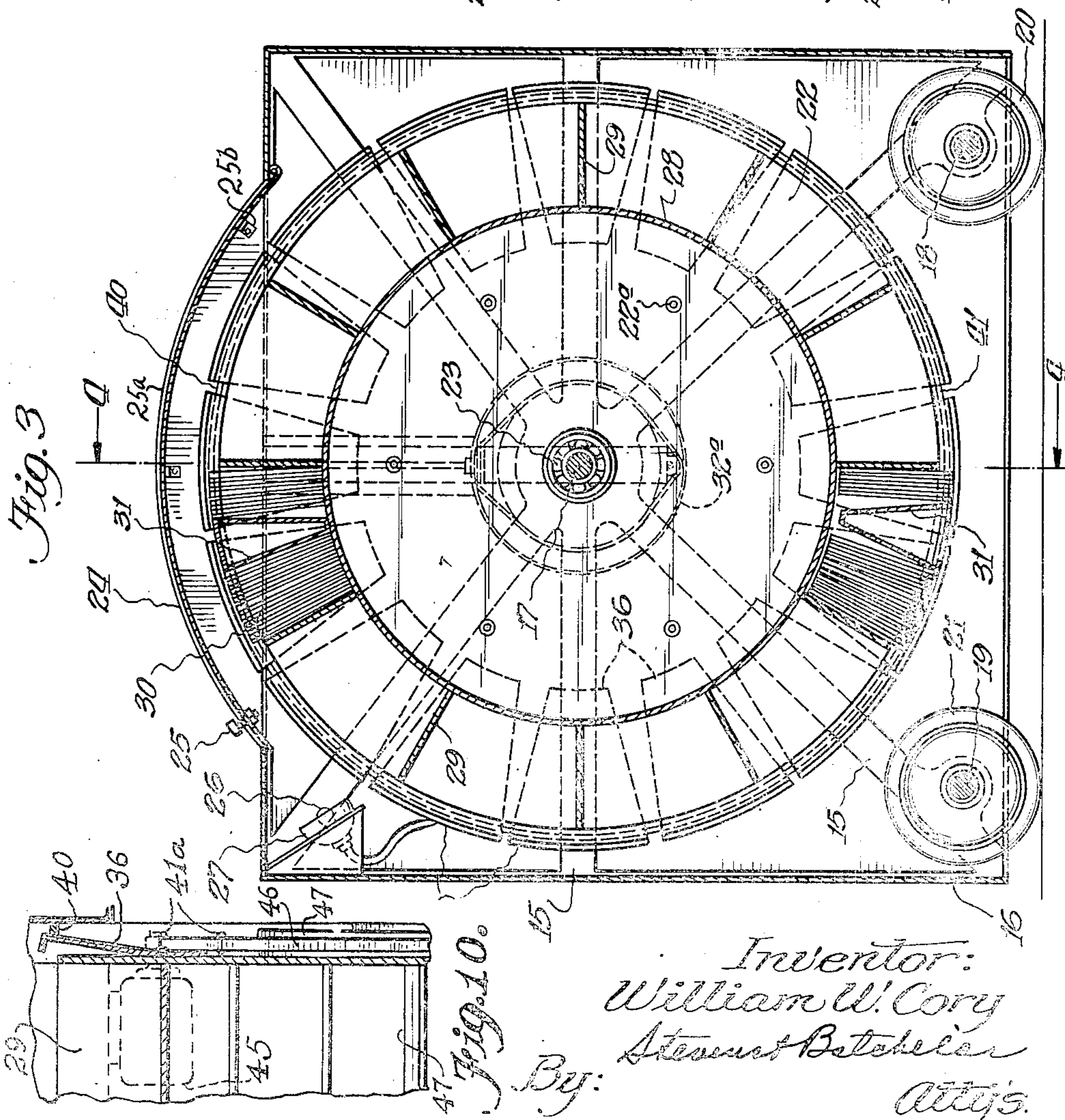
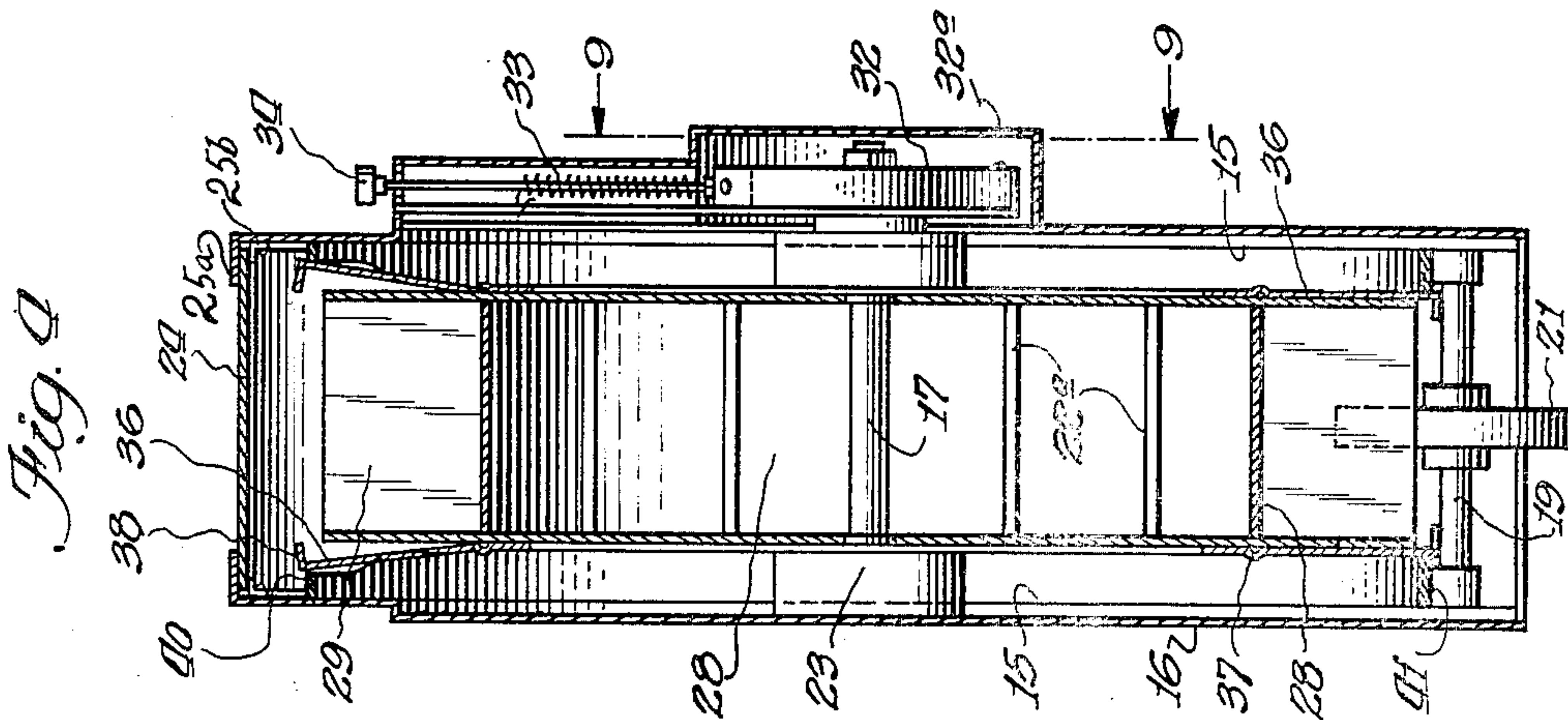
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3 Sheets-Sheet 2



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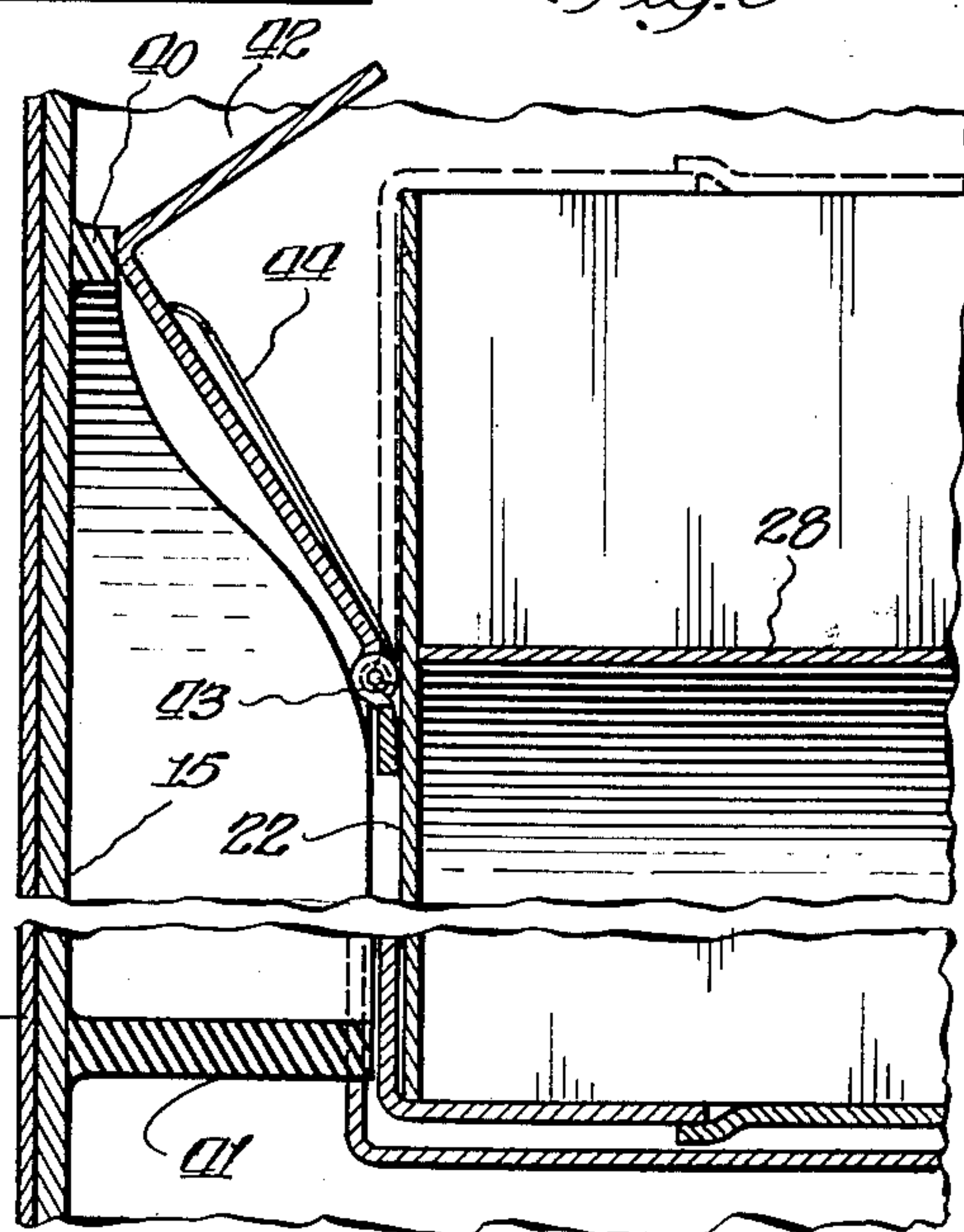
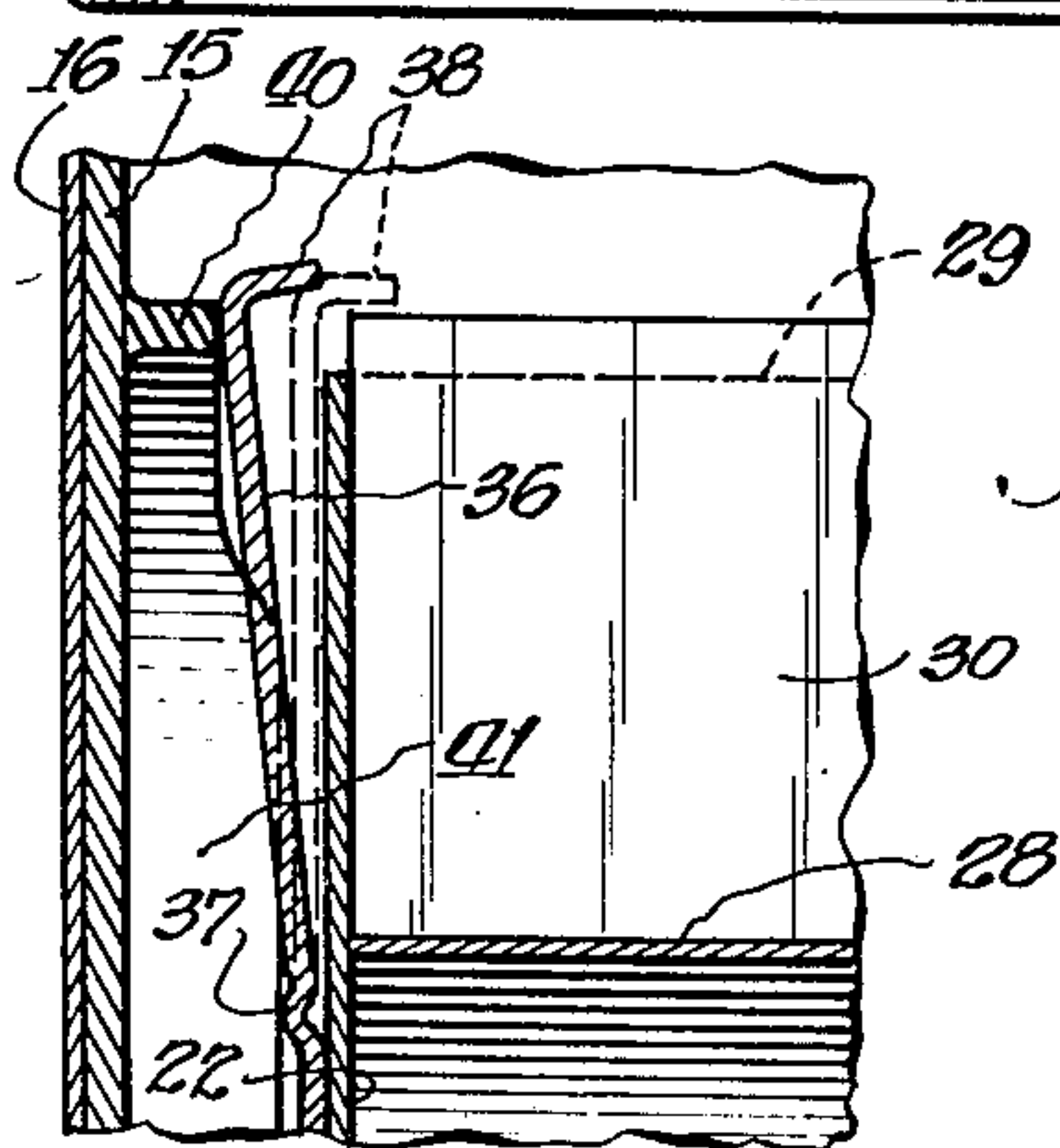
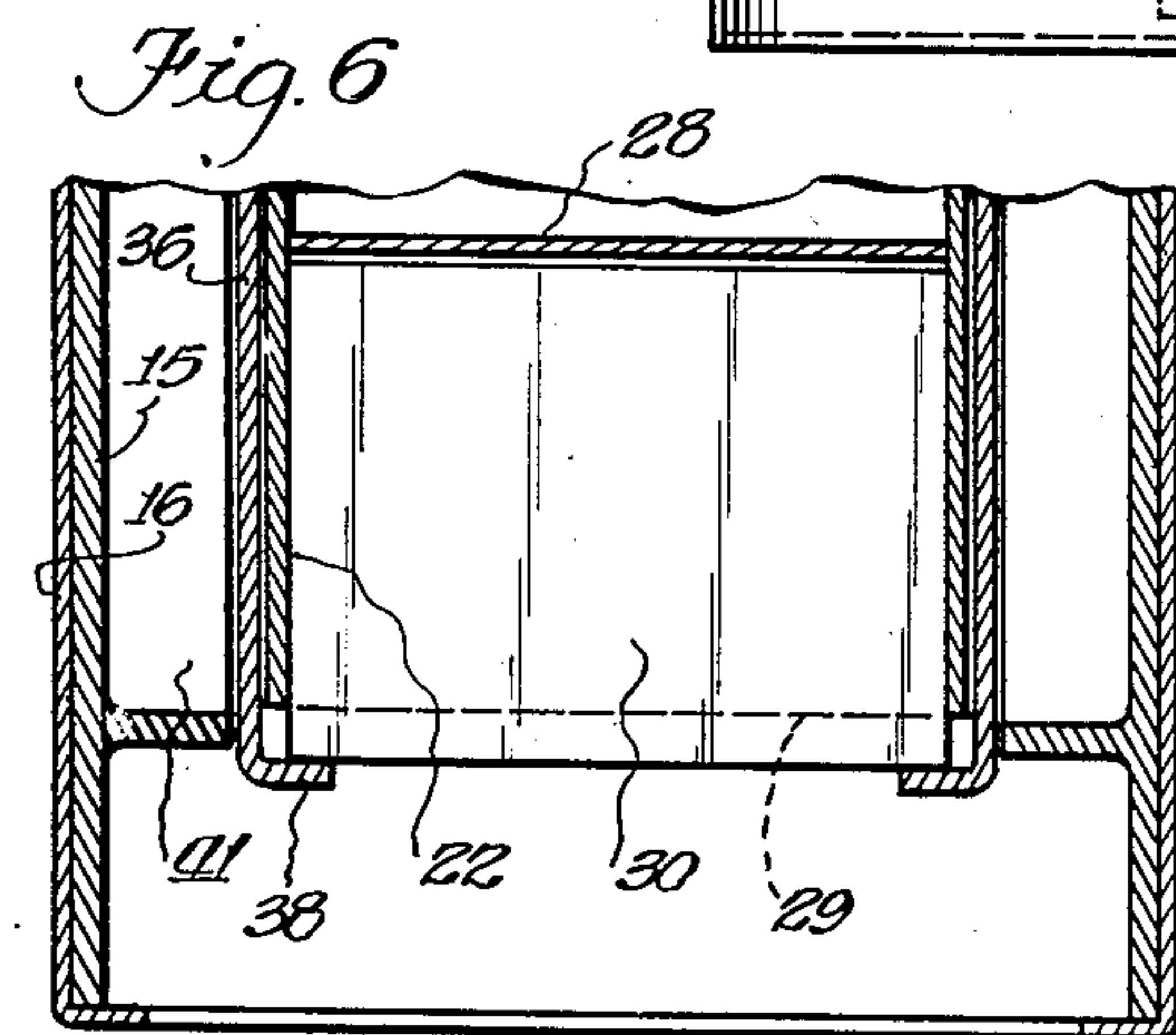
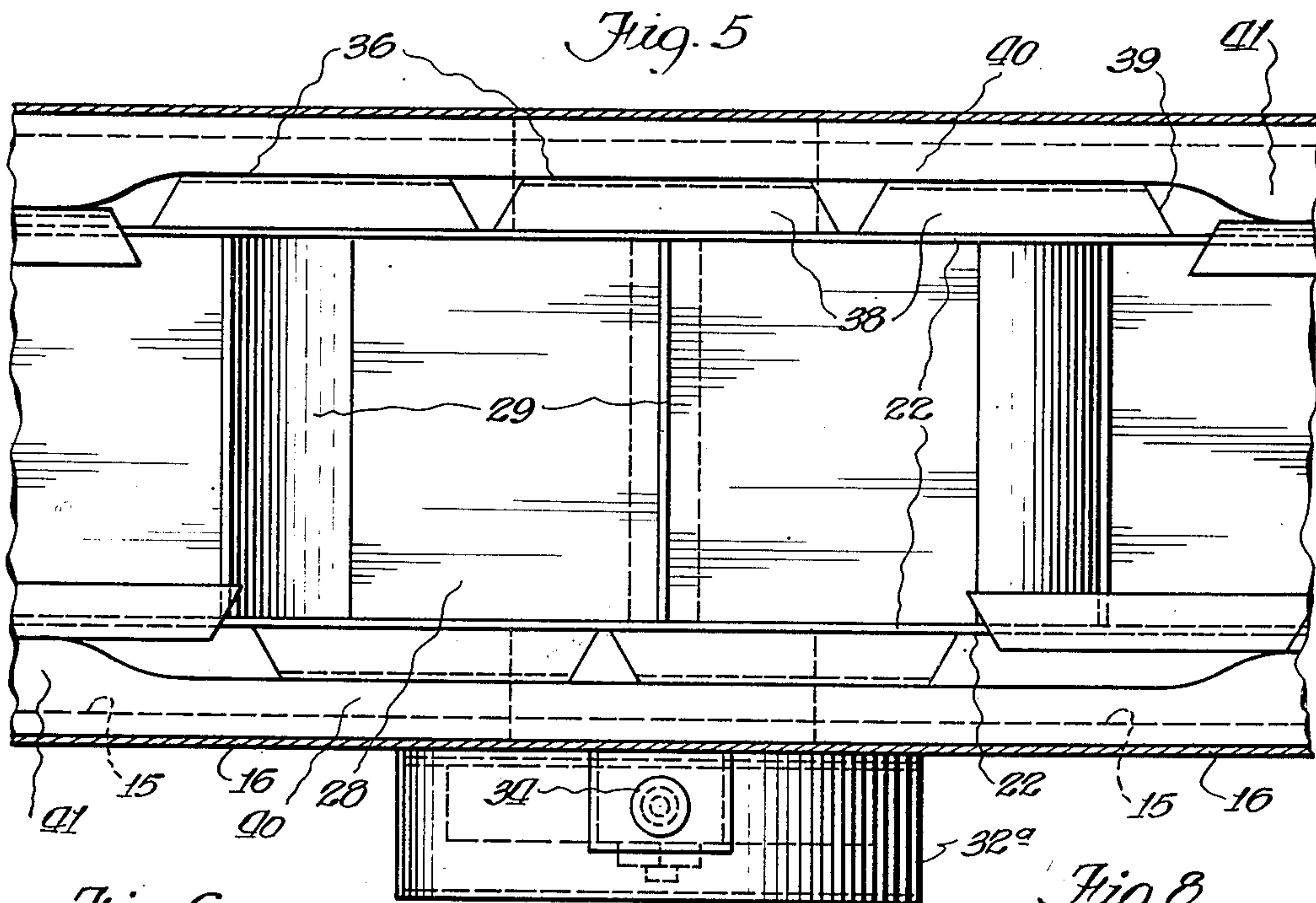
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,343,280

ROTARY INDEX FILE

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Application January 23, 1942, Serial No. 427,991

10 Claims. (Cl. 45—3)

My invention relates to rotary index files wherein a drum with circularly-spaced compartments is rotatable to bring the contents of any compartment to a position of handy approach, and my main object is to provide a file of this kind which accommodates and retains index cards, docket envelopes, catalog folders, reference booklets, or other reference data without special retaining mechanisms or devices, provided that the material is of substantially uniform length.

A further object of the invention is to provide a file of the above character which allows full access to the material situated in the zone of approach or use for the insertion, removal, or replacement of such material.

A still further object is to provide means effective to properly retain against loss or displacement such material as is not in, or has moved away from, the zone of approach or use, such means, however, acting automatically to clear what material is present in, or has moved into that zone, for the handling or removal of the same or the insertion of new material.

Another object of the invention is to devise a development of the basic structure which lends it the form of a rotary bin or receptacle for articles or goods in any desired assortment, variety or grading.

An important object of the invention is to construct the same along line of simplicity and for ease and convenience in operation.

With the above objects in view, and any others which may suggest themselves from the description to follow, a better understanding of the invention may be had by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the improved file;

Fig. 2 is an enlarged elevation of the file with one side removed to disclose the interior;

Fig. 3 is a view similar to Fig. 2, in medial section;

Fig. 4 is a cross-section on the line 4—4 of Fig. 3;

Fig. 5 is a top plan view on a more magnified scale showing an arrangement in the upper part of the file;

Fig. 6 is a fragmental cross-section of the lower portion of a file compartment;

Fig. 7 is a similar view of an upper portion;

Fig. 8 is a similar view of both an upper and lower portion of a modified structure;

Fig. 9 is a fragmental section showing a braking device and

Fig. 10 is a fragmental duplication of the upper portion of Fig. 4, showing a motor drive.

Various developments have appeared along the lines of rotary index files, the purpose being to store a relatively large amount of material while having any part thereof available in an easy position of approach or use at will. Obviously, while the upper portion of the rotary unit serves naturally to support the cards, files, or other material therein contained, means must be provided to retain such material against loss or displacement when it is carried around to the lower portion of the file. To meet this problem, various mechanisms or devices have been employed similar to those used in binders and ledgers, such devices requiring that the cards or other material be perforated, slotted, or otherwise specially formed in order to become adapted to the retaining devices, and be locked against departure on the down travel of the file-carrier. Clearly, such devices render a rotary file expensive and cumbersome, and also put the user to an extra expense to purchase the special cards to fit the retaining mechanism. Also, the retaining mechanisms which have come to my attention in rotary files present a complicated appearance, take up room, and are subject to getting out of order when not carefully handled or attended to. It has therefore been my intention to develop a rotary file which eliminates the need or concern for a special type of card or other material to fit the file, requiring only that the material be of substantially uniform length to fit in the file and conform to its retaining means, and also to provide a file which is not in the least suggestive of any mechanism or device of a mechanical nature to the user or average observer.

In accordance with the foregoing, specific reference to the drawings indicates the frame of the improved file at 15, the same being of skeleton shape and composed of two laterally-spaced units. The frame is preferably square and encased by a sheet metal housing 16 of the same shape. The frame units are connected across by a shaft 17 at the center, a shaft 18 at the lower rear, and another shaft 19 at the lower front. The rear shaft 18 receives ground wheels 20 near the ends, while the frontal shaft 19 receives a single ground wheel 21 in the center. The file is thus movable in the form of a portable cabinet to any point where its use is desired.

As is usual in rotary files, the frame units 15 receive between them a rotary drum 22 composed of side walls joined by suitable spacers 22a, the drum being journaled on the shaft 17 by

means of ball bearings 23. The housing 16 is open at the top and allows a part of the drum to protrude, the housing receiving a sliding lid 24 having a finger knob 25 at its forward end. Thus, the lid 24 may be slid back along outer and inner guides 25a and 25b for approach to the top portion of the drum. As a further convenience, the frontal top corner of the housing is equipped with an electric lamp 26 whose reflector 27 casts light over the upper portion of the file in the manner of a concealed lighting unit.

The drum 22 has a cylindrical floor 28 and a series of radial partitions 29 extending from the floor to the drum rim. Thus, the partitions 29 define compartments for groups of cards 30, 15 docket envelopes, or other material intended to be stored in the file; and I have provided hollow spacer blocks 31 of substantially V-shape to be inserted between groups of the cards as indicated in the top and bottom portions of Fig. 3 20 in order to prevent batches of cards from collapsing when their number is small or reduced in any compartment.

It is probable that at no time will the material in the file be uniformly distributed throughout its compartments, so that a tendency will always be present for the drum to stop where it is bottom-heavy or to turn to such a position the moment it is released. Primarily, with a file of this type well loaded, it must be made as easy 30 as possible to turn because of the circumstance just mentioned, wherefore the ball bearings 23 have been provided. However, in order that the drum may not turn of itself when in use, I have provided a normally-applied brake 32 for it, so 35 that the brake must be released when it is desired to turn the drum. The brake is enclosed in a casing 32a, and its mechanism is illustrated in Figs. 4 and 9. The unit is preferably a conventional pony brake, employing a band 32 and 40 a spring 33 which is tensioned when an external knob 34 is pressed by the operator, causing the band to relax its hold on the disc 35 carried by the drum 22. However, any type of brake may be employed which has a handy control to 45 release it at the operator's will.

While the cards or other material in any upper compartment of the drum may be relied upon to substantially maintain their positions, it is obvious that when the drum is turned the material 50 in such compartment will gain a tendency to slide and eventually fall out of the drum. I have, therefore, provided a series of retainers along each side of the drum, these being key-stone-shaped plates 36 and occurring adjacent to the rim portions of the drum. The shape of the plates conforms substantially to the centering of the drum; and the inner ends of the plates are welded to the outside surfaces of the drum walls. The plates 36 are of spring sheet metal and 55 formed with a crimp or corrugation 37 near their inner ends for increased flexibility. As shown in Fig. 7, the outer portions of the plates 36 have bends 38 directed inwardly of the drum, these bends being fairly short, but with flared sides 39 60 as indicated in Fig. 5 in order that the bends of each plate series may adjoin more closely inwardly of the drum than on the outside. Fig. 6 shows that the plates 36 are normally very close to the drum walls and with the bends of opposite plates juxtaposed when these occur in the lower portion of the file, while the plates depart from this position—also indicated by dotted lines in Fig. 7—to the position denoted by full lines in the same figure when the plates are 70

at the upper portion of the file. The bends of the plates as position in Fig. 6 serve as supports for the cards 30 or other material contained in the lower file compartments, while the departed position of the plates is calculated to give the bends 38 of opposed plates full clearance outside the drum walls relative to the upper file compartments, so that maximum access may be had thereto for any purpose.

Fig. 7 shows the position of a typical card, envelope, or other item in one of the top compartments, showing that such item would come slightly below a pair of plate bends 38 in case these were gathered to the dotted line position. Thus, a slight allowance is had for unevenness in the height of a card group; and the group gradually shifts through the small space when the drum is rotated, so as to assume the position shown in Fig. 6. It must also be noted from Figs. 6 and 7 that the cards 30 project substantially from the compartments in which they are contained, whereby to allow finger space at the sides, when any card is to be removed or adjusted.

The normal tendency of the plates 36—which may be more properly called retainers—is outward, as indicated by full lines in Fig. 7; and each frame unit 15 receives a ring 40 along its inner side by means of welding or other securing means—the upper portion of the ring being narrow in order to allow the retainers the necessary clearance. However, the rings 40 become gradually thickened inwardly on the way down as indicated at 41, so that they may serve as a cam when the drum rotates to force the retainers from the separated full-line position of Fig. 7 to that of Fig. 6 as the retainers are carried downwardly. Thus, the positions of the retainers are automatically controlled by the rotation of the drum in a manner to keep the retainers clear of the drum compartments when these are at the upper or service portion of the file, and to apply the retainers for the retention or support of the drum contents when such compartments leave that portion of the file. The retainer bends 38 recede at the sides as mentioned for better clearance as they flex or return past each other.

Fig. 8 illustrates a modification of the retainer group to adapt the principle of the file to a different use. Thus, the structure could be used as a rotary bin or storage cabinet for any type of loose articles, such as bolts, other metallic parts, and even bulk or packaged groceries. As shown in Fig. 8, the variation consists in making the retainers 36 with bends 42 which are of such width that opposed ones either meet on closing or overlap—as indicated by the closed positions of the retainers. In the present embodiment, it is preferable that the retainers be of solid or heavy construction and therefore hinged, as indicated at 43, the hinges being provided with extended wire springs 44 for the automatic separation of the retainers. Also, it is preferable that the retainers close directly over the side walls of the drum, so as to check the escape of any very small parts or of loose material in case that type of contents is contained in the drum compartments.

It is apparent from Fig. 5 that the retainers at one side of the drum are staggered to some extent from those at the other side. The object of this construction is to prevent any card or item from finding a space between retainers when at the bottom of the file and gaining a tendency to fall out. As a further expedient

Fig. 2 shows that a motor 45 may be installed in the rear upper corner of the frame and a belt 46 led from the motor through slots 41a in the cam ring 40, as indicated in Fig. 10, to a pulley 47 on the drum to operate the same in case the structure is large and the drum difficult to operate by hand. A suitable starting and stopping control for the motor may be installed, including the function of a brake and employing the hand knob as a control, also, since the motor installation would be in the path of a slidable lid 24, the latter could be modified with a hinge at the rear to open upwardly.

It will be evident from the above description that I have provided a file or storage cabinet which always allows full access in the zone of approach for the handling of its contents, the insertion of new material, or the removal or replacement thereof. In other words, no device or control need be operated or had in mind in order to secure these facilities. Also, the cards or other material can be of any form provided that their length is fairly even or uniform so as to be within the closing reach of the retainers. In fact, items may be of other than rectangular shape, and the compartments formed accordingly, if the requirements so dictate. Also, the cards need not be perforated, slotted, cut, or otherwise specially formed, doing away with expense in this connection. Further, no visible mechanism is present or in the way for the retention of the cards or other items, or to become tarnished or dust-laden and unsanitary. A view into the compartment shows them to be fully open in the zone of approach; and no mechanism is visible to detract from the neatness of the file. Finally, it is apparent that the novel file, despite its advantageous features, is a structure capable of being produced at reasonable cost and usable with facility by any person after a slight amount of practice.

While I have described the invention and its modified form along specific lines, various minor changes or refinements may be made therein without departing from the principle of the invention, and I desire to consider all such changes and refinements as coming within the scope and spirit of the appended claims.

I claim:

1. In a rotary file, a support, a drum rotatable therein on a horizontal axis and formed with side and cross walls to define a circularly-arranged series of compartments opening radially, a substantially-circular series of plates outside each side wall, each plate being secured with its inner portion to such side wall and in a position departing toward its outer end from the side wall, bends from the outer ends of the plates in the direction of the related side walls, and a circular cam carried by the support in juxtaposition to each series of plates, the cam rising beyond a given region along the drum to urge each plate leaving such region toward the drum, placing each plate bend in a position peripherally of the drum as a bar to the compartment openings there located.

2. The structure of claim 1, said support comprising a frame with side walls receiving the drum between them, each frame wall being opposite a series of said plates, and the cam for each series being a vertical ring secured with its outer edge to the related frame wall, the inner edge of such ring having the cam profile.

3. A rotary file comprising a rotatable drum formed with side and cross walls to define a cir-

cularly arranged series of compartments opening radially, an enclosure journaling the drum and having an entrance opposite and partway around the drum periphery, a series of elements carried externally by each side wall of the drum and along the course of said compartments, the elements opposite said entrance clearing the compartments, said elements having outer portions directed toward the related side walls, and means projecting the portions of such elements as occur away from said entrance over correspondingly-located compartments to form barriers therefor.

4. The structure of claim 3, said elements comprising radially-directed plates with their inner end portions secured to the drum.

5. The structure of claim 3, said elements comprising radially-directed plates with their inner portions secured to the drum, said outer portions of the plates opposite said entrance being spaced from the drum to clear the compartments, and the plates away from said entrance being tensioned by said projecting means to lie close to the drum.

6. The structure of claim 3, said elements comprising radially-directed plates with their inner portions secured to the drum and said outer portions formed as bends in the direction of the compartments, the plates opposite said entrance being spaced from the drum inwardly of said bends to place the latter clear of the compartments, and the plates away from said entrance being tensioned by said projecting means to locate their outer portions as said barriers.

7. The structure of claim 3, said means comprising cams carried by the enclosure opposite each series of elements and receiving them as followers, the cams being low opposite said entrance to permit said clearing of the outer portions of the corresponding elements, and the cams rising beyond said entrance to the extent of projecting the outer portions of the related elements as stated.

8. A rotary file comprising a rotatable drum formed with side and cross walls to define a circularly-arranged series of compartments opening radially, an enclosure journaling the drum and having an entrance opposite and partway around the drum periphery, a series of elements carried externally by each side wall of the drum and along the course of said compartments, said elements having outer portions directed toward the related side walls, and means permitting the outer portions of the elements occurring opposite said entrance to clear the compartments, said means being effective against the outer portions of such elements as depart from said entrance on the rotation of the drum in either direction to project such outer portions over correspondingly-located compartments to form barriers therefor.

9. A rotary file comprising a rotatable drum formed with side and cross walls to define a circularly-arranged series of compartments opening radially, a support journaling the drum, a series of plates carried on each side of the drum and along the course of said compartments, the plates being formed at their outer ends with bends extending toward but clearing the compartments, and means effective on the rotation of the drum to advance the plates in directions to locate their bends over the compartments as barriers, the sides of the plates being spaced from each other and the bends expanding therefrom to terminate in closely-adjointing succession.

10. A rotary file comprising a rotatable drum formed with side and cross walls to define a circularly-arranged series of compartments opening radially, a support journaling the drum, a series of plates carried on each side of the drum and along the course of said compartments, the plates being formed at their outer ends with bends

extending toward but clearing the compartments, and means effective on the rotation of the drum to advance the plates in directions to locate their bends over the compartments as barriers, the plates in one series being staggered in respect to those in the other series.

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