June 27, 1972 R. T. PROULX 3,672,740

SUPPORT FOR ROTARY FILING SYSTEM

Filed March 4, 1971 3 Sheets-Sheet 1

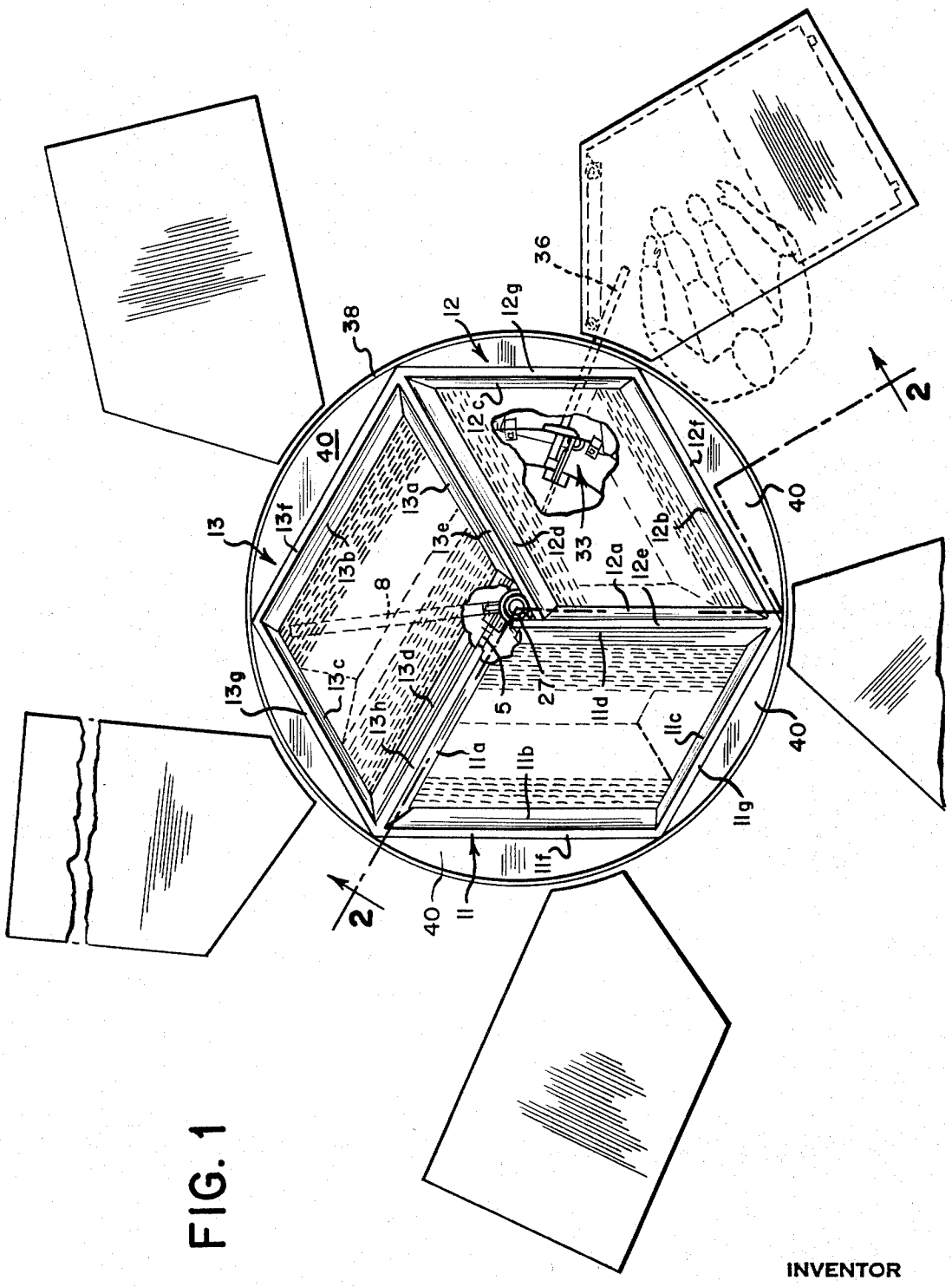


FIG. 1

INVENTOR
Romeo T. Proulx
BY
Pennie, Edmonds, Morton, Taylor & Adams
ATTORNEYS

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FIG. 2

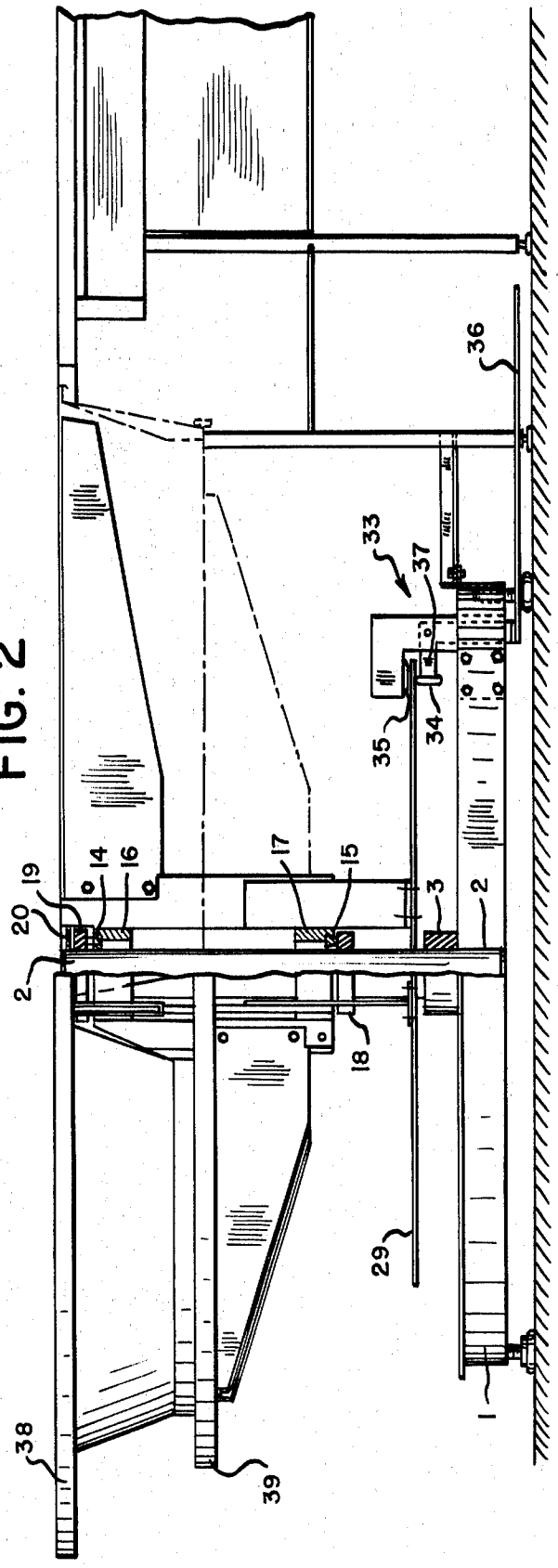
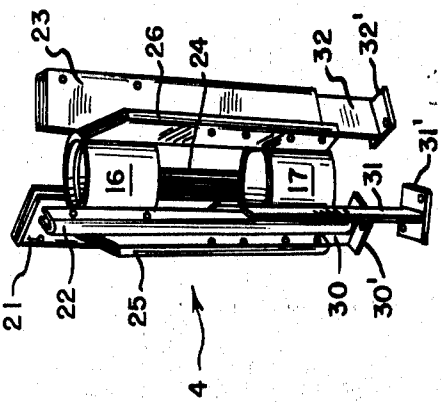


FIG. 3



INVENTOR
Romeo T. Proulx
BY
Ronnie, Edwards, Morton, Taylor & Adams
ATTORNEYS

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FIG. 4

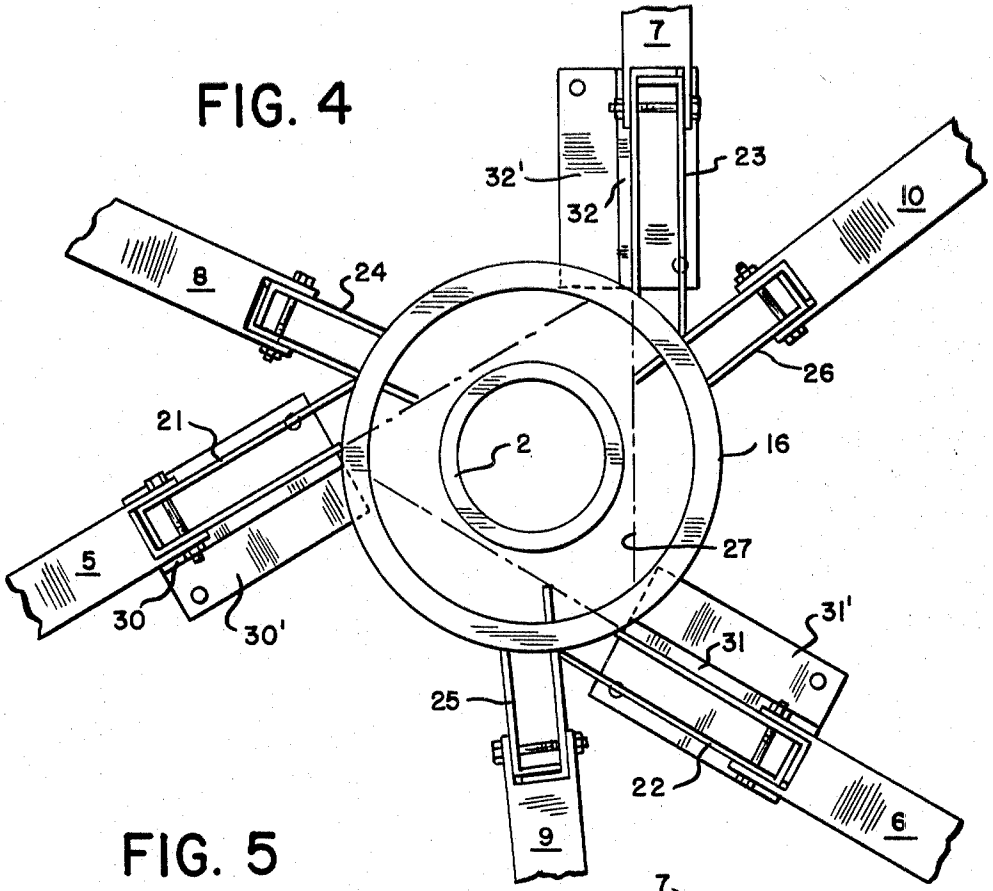
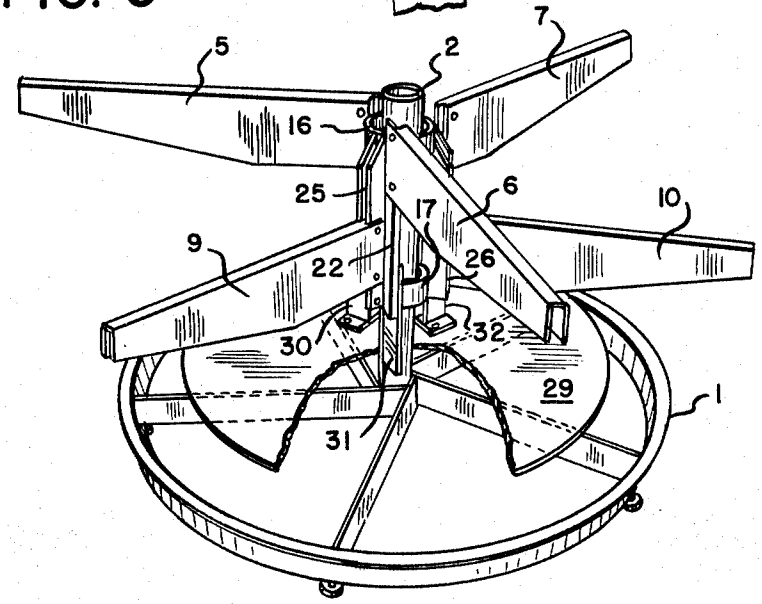


FIG. 5



INVENTOR
Romeo T. Proulx
BY
Ronnie, Edwards, Morton, Taylor & Adams
ATTORNEYS

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3,672,740

SUPPORT FOR ROTARY FILING SYSTEM

Romeo T. Proulx, Copiague, N.Y., assignor to Barry Wright Corporation, Watertown, Mass.

Filed Mar. 4, 1971, Ser. No. 121,112
Int. Cl. A47b 53/00, 87/00
U.S. Cl. 312—202 9 Claims

ABSTRACT OF THE DISCLOSURE

An improved support for a rotary filing system comprising two sets of vertically spaced support arms rotatably mounted on a vertical shaft. The upper set of arms support containers for holding file data in a cantilever fashion while the lower set of arms support the containers from underneath. The different parts of the support structure are constructed as separate compact elements for assembly at the site of use of the filing system. The containers for holding the file data have a rhomboid shape and are arranged around the support shaft in side-by-side relation.

BACKGROUND OF THE INVENTION

Rotary filing systems have been found to be practical for containing large quantities of file data in a single unit and in readily accessible reach of one or more operators seated around the unit. Generally, however, rotary filing units used for containing large quantities of file must, themselves, be rather large in size. The large size of such units as well as their great weight when fully loaded have presented certain problems. In particular, the large size and weight normally require that the support structure of the unit be of massive construction and rigidly assembled to withstand the heavy loads. Typically, the support structure is formed of heavy steel plates or rod members which are welded or otherwise permanently secured together to satisfy the size and load requirements.

Assembly of units of this construction usually must be done at the place of manufacture as it requires special equipment and techniques and trained personnel. Once assembled, however, such units are cumbersome and expensive to ship. Also, in some cases, the large size requires that doorway openings on the premises where the unit is to be installed be enlarged or that the unit itself be dismantled and reassembled in the intended office or room within the premises where the unit is to be used. Of course, enlargement and replacement of the doorways and wall structure require special carpentry. Also, dismantling and reassembly of the unit will require special equipment and trained personnel. The disruptions caused by installation difficulties and the added costs involved are of disadvantages both to the manufacture and the purchaser. Further, even once a unit is finally installed in the premises, if it later becomes desirable to move it to another location, similar difficulties will be encountered.

The problems encountered with preassembled filing units have been alleviated to some extent by constructing units of parts which are assembled by bolting or similar means. This permits assembly at the site of the intended use; but constructions of this type as presently available are rather complicated and usually require trained personnel to assemble them. Also, to facilitate field assembly, such constructions usually include more parts than would otherwise be required with preassembled units. Even with units constructed for assembly at the site of intended use, however, the heavy load requirements have generally necessitated the use of massive support structure. Although this may not present serious problems as far as assembly is concerned, the massiveness of the unit can have an adverse effect on the operating characteristics of the unit. For example, the massive size of the unit can make it difficult for the operator to start and stop rotation of the unit without power assist mechanisms. Disadvantages of this nature can make the unit somewhat unattractive.

SUMMARY OF THE INVENTION

The improved support for rotary filing systems as constructed in accordance with the teachings of the present invention eliminates the necessity of preassembly the unit at the factory. Instead, the entire support is readily packageable in small subassemblies which can be conveniently shipped. Also, the subassemblies are of such a construction that they may be easily assembled at the site of use without requiring specialized tools, equipment or specially trained personnel.

Generally, the improved support is formed of lightweight materials and assembled in such a manner so as to withstand the heavy load of large quantities of file data. At the same time, the assembled support structure is of such construction as to permit the operator to start and stop rotation of the unit when fully loaded with a minimum amount of effort. Additionally, the support structure permits effortless rotation even when the unit is loaded in an unbalanced manner.

In construction, the improved support generally includes cantilever support arms for rotatable supporting three rhomboid shaped file containers in side-by-side relation about a vertical support shaft. The support structure also includes underlying support arms which are adjustable to receive containers of different depths. At the bottom of the support structure, a brake mechanism is provided and separate controls for the brake are advantageously positioned at each location where an operator will be seated.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a rotary filing unit partially broken to show portions of the underlying support and brake structure;

FIG. 2 is a cross-sectional view taken along lines **2—2** of FIG. 1;

FIG. 3 is a perspective view of the hub portion of the support structure;

FIG. 4 is a plan view of the hub shown in FIG. 3; and

FIG. 5 is a perspective view of the assembled support structure with the containers removed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 and 2 show the overall construction of the rotary filing unit incorporating the improved support structure of the present invention. Generally, the support structure is comprised of a circular base member **1** on which a vertical support shaft **2** is removably supported. For this purpose, a collar **3** is fixed to the upper surface of the base member **1**. A hub structure generally designated by reference numeral **4** in FIG. 3 is rotatably mounted on the support shaft **2**. Attached to the hub structure are two sets of support arms. The first set is comprised of upper cantilever support arms **5**, **6** and **7** while the second set is comprised of underlying support arms **8**, **9** and **10**. The support arms together provide the necessary support for separate containers **11**, **12** and **13** which are used for holding the file data.

Referring to FIGS. 2 and 3, the hub structure **4** is comprised of a sleeve means which is rotatably mounted on the support shaft **2** by suitable bearings **14** and **15**. The sleeve means includes two vertically spaced cylindrical members **16** and **17**; and as shown in FIG. 2, the upper member **16** is adapted to receive the bearing **14** at its upper end while the lower member **17** receives the bearing **15** at its lower end. For supporting the bearings and

sleeve means on the shaft **2**, a support collar **18** is pinned to the shaft. The bearing **15** rides on this collar and, in turn, supports the lower cylindrical member **17** of the sleeve. The entire hub structure is held against vertical movement by locking mechanism **19**, **20** attached to the upper end of the support shaft **2**.

The hub structure is completed by a plurality of vertical brackets which are divided into two sets. One set comprising the brackets **21**, **22** and **23** are welded to the outer surface of the cylindrical member for supporting the upper cantilever support arms **5**, **6** and **7**. The outer set includes the brackets **24**, **25** and **26** also welded to the outer surface of the cylindrical members **16** and **17** and used to support the underlying supports arms **8**, **9** and **10**.

As shown in FIGS. 2 and 3, each of the brackets is formed of L-shaped plate members with the seats of the L shape welded to each other in overlapping fashion and the free ends of the leg portions welded to the cylindrical members **16** and **17**. In order to facilitate assembly of the hub structure shown in FIG. 4 with the cylindrical members properly spaced, the brackets **24**, **25** and **26** are each provided with a vertical flange **24'**, and **26'** along the side which is welded to the cylindrical members **16** and **17**. These flanges are disposed intermediate the upper and lower ends of the brackets and extend inwardly between the cylinders and in this way properly hold them spaced during welding.

Each of the support arms are formed of sheet metal bent into a square U-shaped configuration. The arms are adapted to slide over the associated brackets of the hub structure and be attached thereto by machine bolts and weld nuts or similar means. Suitable holes in the support brackets are provided for this purpose. As shown in FIG. 3, the support bracket **21**, for example, is provided with a set of holes for the cantilever support arms **5**. The brackets for the lower support arms are also provided with holes for use in connecting the arms thereto. However, these brackets are provided with a plurality of holes to allow for vertical adjustment of the support arms. Two sets of such holes are shown in FIG. 3. By providing for vertical adjustment of the lower support arms, containers of different depths may be used in the rotary filing system.

As indicated above, the containers used in the rotary filing system of the present invention have a rhomboid shaped outer periphery. Each of these containers also has upwardly diverging opposite sides designated by the reference numerals of the container followed by the letters *a*, *b*, *c* and *d*. As shown in FIG. 5, file data and divider structure held by each of the containers is adapted to pivot on the bottom of the containers about pivot lines extending parallel to the longer sides *b* and *d* of the containers. The file data and associated structure is arranged in each of the containers in a manner such as disclosed in applicant's prior Pat. No. 3,358,692 and in U.S. Pats. Nos. 2,584,174 and 2,634,729 to H. Weston.

Each of the rhomboid shaped containers is formed with opposite acute angles of 60° and opposite obtuse angles of 120°. These angles permit side-by-side orientation of the three containers about the centrally located support shaft **2**. As shown in FIG. 1, the containers are arranged with their outer sides *b* and *c* defining a hexagon. This construction leaves an opening **27** centrally of the unit.

For support purposes, each of the containers is provided with flanged edges, along the top of each side, extending outwardly from the body of the container. The flanges are designated in FIG. 2 by the reference numerals for the containers followed by the letters *e*, *f*, *g* and *h*. The flanges *e* and *h* formed at the adjacent sides *a* and *d* are supported on the upper surface of the cantilever support arms and secured thereto by machine bolts and weld nuts connected to the underside of the top surfaces of the arms. In assembling the containers onto the support arms, the flanges of the adjacent containers will overlap each other so as to bring the containers into closely adjacent orientation.

In order to support the containers in side-by-side orientation, the brackets **21**, **22** and **23** for the cantilever support arms **5**, **6** and **7** are spaced from each other by 120° and connected to the cylindrical members **16** and **17** of the hub structure with their lines of extension extending tangentially to the support shaft **2**. As shown in FIG. 4 there is a slight clearance between these lines of extension and the shaft to permit free rotation of the shaft. With this construction, the shaft may be extended vertically above the containers **11**, **12** and **13** and used for supporting additional tiers of filing equipment.

To provide additional support for the containers, the underlying support arms **8**, **9** and **10** are provided. These arms, like the arms **5**, **6** and **7**, are spaced at 120° from each other. Also, these arms extend in a direction toward the corner of each container formed by the outer unsupported adjacent sides *b* and *c* as to distribute the weight evenly to the support structure.

A braking mechanism shown in FIGS. 2 and 5 is included with the support structure of the present invention. The braking mechanism permits the operator to hold the filing unit stationary while, for example, posting an entry. Also, it can be used to facilitate stopping of the rotation of the filing unit. The braking mechanism includes a circular flexible brake disc **29** positioned below the underlying support arms **8**, **9** and **10**. The brake disc is secured to the hub structure of the support for rotation with the containers by means of torsion bar plate members **30**, **31** and **32**. These torsion bar plate members are welded to the brackets **21**, **22** and **23**, respectively, and to the outer surface of the lower cylindrical member **17**. The torsion bar plate members extend downwardly from the brackets **21**, **22** and **23** and at the lower ends are provided with feet **30'**, **31'** and **32'**. The feet are, in turn, secured by suitable fastening means to the brake disc **29**.

A foot actuated braking means **33** is provided at the periphery of the brake disc **29**. The braking means is shown in FIGS. 1 and 2 as being operably associated with the periphery of the brake disc for selective frictional engagement therewith. In particular, the braking means is secured to the base member **1** of the support structure and includes a wheel **34** which rides along the undersurface of the brake disc during rotation of the filing unit and an overlying frictional brake **35**. A foot operated treadle **36** is connected by suitable linkage mechanism **37** to the wheel **34**. Depression of the foot treadle causes the wheel to move upwardly to flex the disc **29** into frictional engagement with the brake **35**.

If desired, a separate braking mechanism may be provided at each of the operator locations about the filing unit. Also, the braking mechanism may be electrified. Similarly, motive power may be provided for rotating the filing unit. Where this is done, a suitable control panel will be provided at each of the operator locations about the unit.

To complete the srtucture of the filing unit, the three containers **11**, **12** and **13** are surrounded by circular upper and lower rings **38** and **39** surrounding the containers at their upper and lower surfaces. In the regions at the upper surface of the containers where the ring **38** extends outwardly of the periphery of the container sides *b* and *c*, inset plate members **40** are attached. The upper ring defines a hand rail which can be grasped by the operator to rotate or stop rotation of the filing unit. Also, the rings together provide the filing unit with a smooth outer periphery and guard the operator against corners or projections which could otherwise bump against her when standing or sitting close to the unit.

I claim:

1. In a rotary filing system employing a plurality of containers arranged in side-by-side relation and holding

file data, an improved support for said containers comprising:

(a) a base member;

(b) a vertical support shaft removably supported by said base member;

(c) sleeve means rotatably mounted on said shaft;

(d) vertical brackets secured to said sleeve means at spaced locations about its periphery;

(e) cantilever support arms removably attached to alternate brackets and extending generally horizontally away from said sleeve means at the upper end thereof, each two adjacent support arms being spaced from each other to align with two adjacent sides of one of the containers of the filing system and to align with the adjacent sides of the containers on opposite sides of said one container, said support arms being adapted to support said containers in a cantilever fashion; and

(f) underlying support arms removably attached to the remaining brackets and extending generally horizontally away from said sleeve means at the lower end thereof,

said underlying support arms being adapted to support said containers from below intermediate said cantilever support arms.

2. An improved support for a rotary filing system according to claim **1** employing a plurality of four-sided containers wherein:

(a) each of said underlying support arms extends in a direction toward the corner of one of said containers formed by the unsupported adjacent sides thereof.

3. An improved support for a rotary filing system according to claim **2** wherein:

(a) said underlying support arms are vertically adjustable on said sleeve means for supporting containers of different depth.

4. An improved support for a rotary filing system according to claim **1** for supporting three containers each having a rhomboid shaped outer periphery with upwardly diverging opposite sides and arranged with a longer side of one container adjacent a shorter side of an adjacent container wherein:

(a) said cantilever support arms are spaced at 120° and extend generally tangentially of said support shaft.

5. An improved support for a rotary filing system according to claim **4** wherein:

(a) said underlying support arms are spaced at 120° and extend in a direction toward the corners of the

containers formed by the unsupported adjacent sides thereof.

6. An improved support for a rotary filing system according to claim **4** further comprising:

(a) a disc brake disposed below said sleeve means for rotation about said support shaft with said containers;

(b) torsion bar means connected at one end to at least one of said brackets and at the other end to said disc brake; and

(c) brake means operably associated with the periphery of said disc brake for selective actuation to stop rotation of said container by stopping rotation of said disc brake.

7. An improved support for a rotary filing system according to claim **6** wherein:

(a) said torsion bar means includes a plurality of torsion bar plate members, each of which is connected to one of the brackets to which the cantilevered support arms are attached.

8. An improved support for a rotary filing system according to claim **1** wherein:

(a) said sleeve means includes two vertically spaced cylindrical members; and

(b) at least one of said brackets includes a vertical flange along one side intermediate its upper and lower ends for extending inwardly between said cylinders to hold them in predetermined relation during assembly to said brackets.

9. An improved support for a rotary filing system according to claim **8** wherein:

(a) said brackets each include two L-shaped plate members with the seats formed by the L shape secured to each other in overlapping relation and the legs extending in the same general direction and secured at their free ends to the outer surface of said cylinders.

References Cited

UNITED STATES PATENTS

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3,246,940	4/1966	Harper	312—279
3,084,007	4/1963	Fuller et al.	312—202 X
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CASMIR A. NUNBERG, Primary Examiner

U.S. Cl. X.R.

312—197

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,672,740 Dated June 27, 1972

Inventor(s) Romeo T. Proulx

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Reference

"Proulx et al 312 97" should read --Proulx et al 312 197--;

"Harper" should read --Karper--.

In the Specification

Column 1, line 29 "file must" should read --file data must--;

Column 2, line 9 "preassembly" should read --preassembling--;

Column 2, line 37 "broken to" should read --broken away to--;

Column 3, line 11 "outer set" should read --other set--;

Column 3, line 22, "24', and 26'" should read --24', 25' and 26'--;

Column 3, line 35, "support arms 5" should read --support arm 5--;

Column 4, line 19, "C as to" should read --C so as to--;

Column 4, line 66, "inset plate" should read --insert plate--.

Signed and sealed this 6th day of March 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents