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Szabrak et al.

[11] **3,792,507**

[45] **Feb. 19, 1974**

[54] **CLEANER STAND FOR COMPUTER DISKS**

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[52] U.S. Cl. ..... **15/268,** 206/62 P, 211/13, 248/188.1, 274/47, 341/14.1 C

[51] Int. Cl. **A47l 25/00,** F16m 11/20

[58] Field of Search ..... 15/210 R, 268; 211/40; 274/47

[56] **References Cited**

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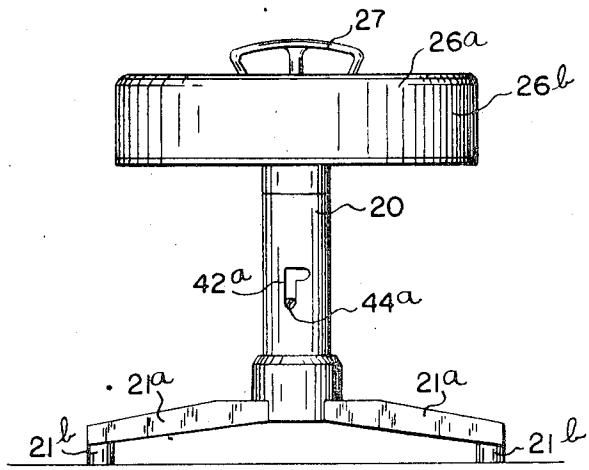
Primary Examiner—Daniel Blum

Attorney, Agent, or Firm—Baldwin, Egan, Walling & Fetzer

[57] **ABSTRACT**

A cleaner stand is provided for manipulating a computer pack completely enclosed in a cover providing a very simple means for releasing an internal lock which normally retains the cover to the pack of computer disks, after which the cover may be removed and the disks may be rotated on the stand while they are cleaned.

1 Claim, 10 Drawing Figures



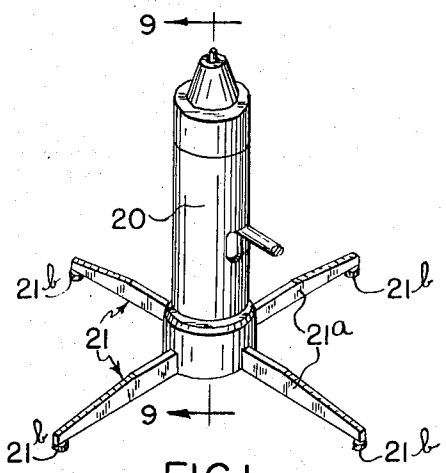


FIG.1

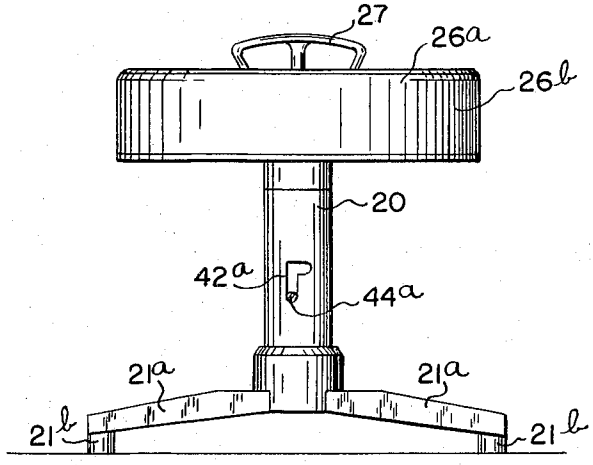


FIG.2

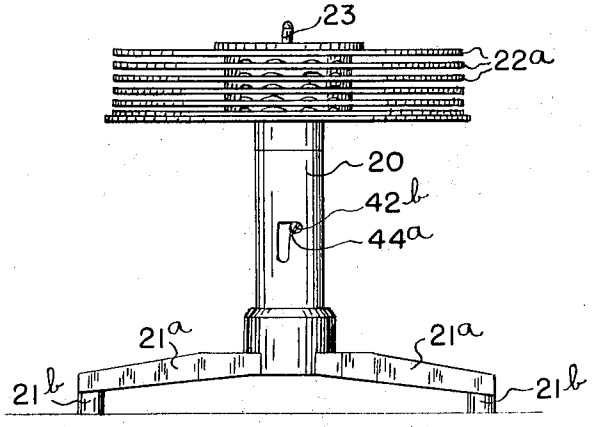


FIG.3

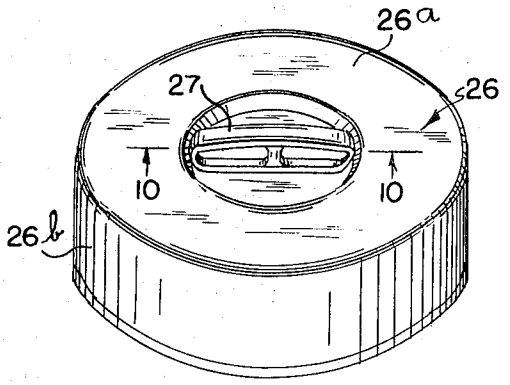


FIG.4

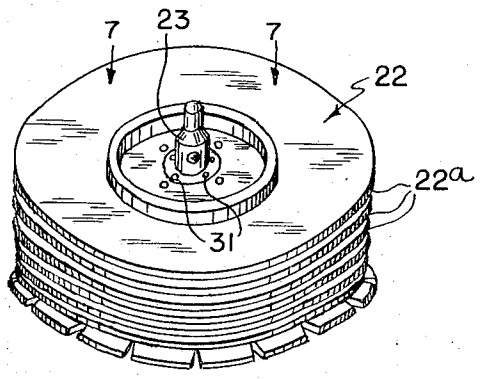


FIG.5

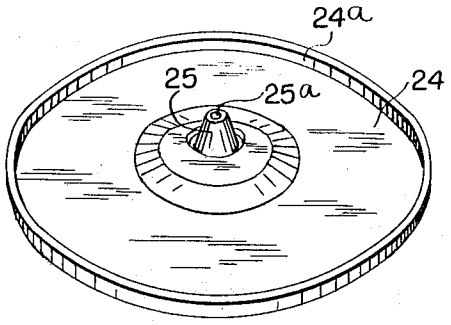


FIG.6

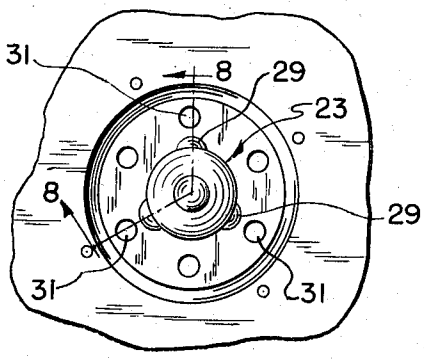


FIG.7

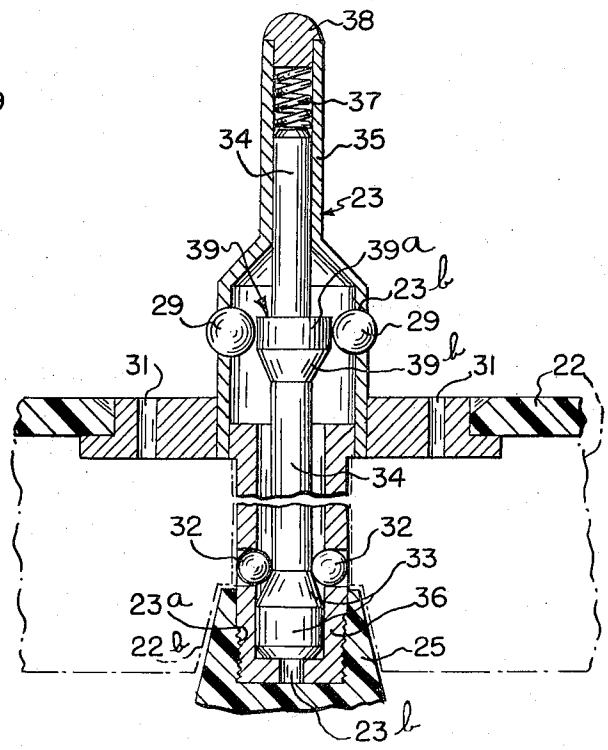


FIG.8

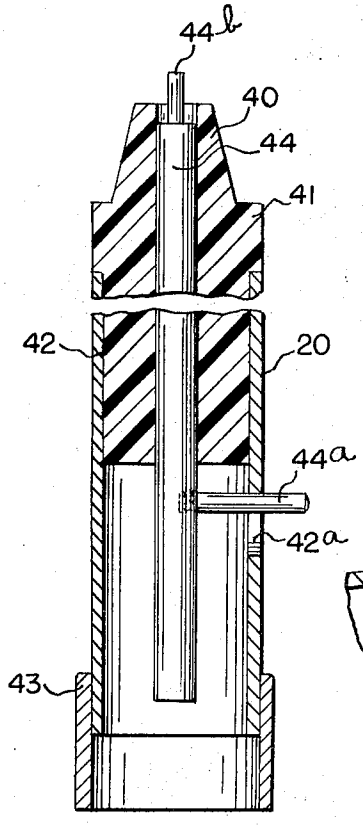


FIG.9

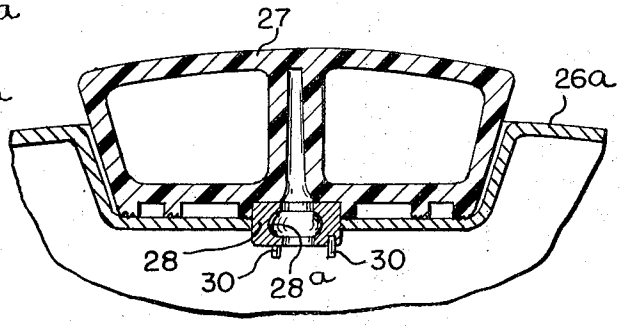


FIG.10

CLEANER STAND FOR COMPUTER DISKS

BACKGROUND OF THE INVENTION

This invention relates to means for facilitating the cleaning of a Honeywell computer disk which utilizes an assembly of a plurality of concentric parallel computer disks mounted on a central spindle to which is secured a bottom cover closing the entire space beneath the disks and above which is secured a downwardly opening pan shaped cover which has a top and side walls which, together with the bottom, completely enclose the computer pack. The cover is normally locked to the spindle by an internal lock. The computer stand of this invention provides a support on which the assembly of computer disks may be rotated when the bottom has been removed and provides a simple means for releasing the internal lock so that the cover may be removed to get at the disks for cleaning the same. Prior to this the practice was to use a tool to pry up under the cover to release the lock and thereafter the assembly of computer disks was rolled on its side during the cleaning operation.

An object of the present invention is to provide a stand on which a pack of computer disks may be supported for cleaning and which includes easily manipulated means for releasing the internal lock which normally holds the top cover to the assembly of computer disks.

Other objects and advantages of this invention will be apparent from the accompanying specification and drawings and the essential features thereof will be set forth in the appended claims.

In the drawings,

FIG. **1** is a perspective view of the cleaning stand of this invention;

FIG. **2** is an elevational view showing the computer stack in position on the cleaner stand with the top cover in place;

FIG. **3** is an elevation similar to FIG. **2** but with the top cover removed;

FIGS. **4, 5** and **6** are respectively perpspective views of the top cover, the assembly of concentric computer disks and the bottom cover;

FIG. **7** is a fragmental top plan view of the central portion of the top of the assembly of computer disks, enlarged, taken generally along the line **7—7** of FIG. **5**;

FIG. **8** is a central sectional view, enlarged, of the spindle which is centrally located in the pack of computer disks illustrated in FIG. **5**;

FIG. **9** is a central sectional view, enlarged, taken along the line **9—9** of FIG. **1**; while

FIG. **10** is a central sectional view, enlarged, taken along the line **10—10** of FIG. **4.**

The cleaner stand of this invention as best seen in FIG. **1** comprises an upstanding pedestal **20** which is rigid with and supported by a base **21** adapted to rest upon a supporting surface. As here shown, the base comprises a plurality of radially extending legs **21***a* welded at their inner ends to the pedestal **20** and having suitable extensions such as feet **21***b* downwardly extending at the outer ends of the legs.

To properly understand the cleaner stand, it will be necessary to give a brief description of the computer pack with which the stand is used. As best seen in FIGS. **2** through **6,** an assembly **22** of a plurality of parallel concentric computer disks **22***a* is mounted on a central

spindle **23** and this pack or assembly is normally completely enclosed. The enclosure includes a bottom **24** which is generally circular with an upstanding cylindrical rim **24***a* which is secured to the assembly **22** by a frusto-conical nut **25** having a lower head, not shown, which underlies the bottom **24** so as to support the same and having an internal thread **25***a* by which the nut **25** is secured on the threads **23***a* of the spindle **23** as shown in FIG. **8.**

The cover **26** is pan-shaped opening downwardly and having a flat circular top **26***a* and an integral downwardly extending side wall structure which is generally cylindrical as shown at **26***b*. Centrally of the cover is a handle **27** as best seen in FIG. **10** which is permanently secured to the cover **26***a* and provided centrally of its underside by keeper means **28** which, as shown in FIG. **10,** comprises a toroidal opening **28***a* into which retractable radially extendible projections **29,** carried by the spindle **23,** as seen in FIG. **8** are adapted to lockingly extend in one of their positions.

The pins **30,** downwardly extending, have nothing to do with the present invention but are best seen in FIG. **10.** These pins extend from the member **28** and are adapted to enter into any of a plurality of openings **31** in FIG. **5** so that the handle **27** may be used to rotate the computer assembly in use thereof.

The balls **32** shown in FIG. **8** have nothing to do with the present invention but are used in the operation of the computer, at which time they are projected radially outwardly from the position shown in FIG. **8** by the cam **33** on the rod **34** which reciprocates axially of the spindle **23** as will be later described.

The spindle **23** provides the reciprocating rod **34** which is supported for vertical movement axially of the spindle by the spindle portion **35** at the upper end and the portion **36** at the lower end as clearly seen in FIG. **8.** Means is provided for normally urging the rod **34** in its downwardly direction which here comprises a compression spring **37** held between the top of the rod **34** at its lower end and by the cap **38** at its upper end, the latter being secured to the spindle structure **23.** Rigid with the rod **34** is a cam **39** which, when the rod is in its lowermost position as shown in FIG. **8,** has a larger portion **39***a* which holds the radially movable balls **29** in their outermost or locking position, at which time they enter into the toroidal portion **28***a* of the member **28** described in connection with FIG. **10.** When the rod **34** is raised to an upper position, as later described, then the cam portion **39***b*, of lesser radial extent than **39***a*, permits the balls **29** to move radially inwardly so as to release them from locking relationship with the toroidal locking rack **28***a*. The balls **29** are captured in suitable openings **23***b* of the spindle **23** as shown in FIG. **8** which prevents movement of the balls **29** longitudinally of the spindle.

The pedestal **20** has a rigid upper end **40** which is complementary to the downwardly opening recess **22***b* of the computer disk assembly **22** which normally receives the frusto-conical nut **25** as shown in FIG. **8.** This is shown in FIG. **9** as being part of a nylon block **41** which is rigidly secured to tubular member **42** which in turn is secured to a metal ring **43** which is welded to the legs **21***a* of the base as previously mentioned. Centrally of the pedestal **20** and axially of the extending upper end **40** thereof, is a reciprocatably mounted plunger **44** which is reciprocated by means of a handle **44***a* extending radially from the plunger through an

opening 42*a*, 42*b* in the tubular member 42. As best seen in FIG. 2, the handle 44*a* when in the notch 42*a* is held there by the downward pressure of spring 37 as shown in FIG. 2, but when lifted and placed in the upper notch 42*b* as shown in FIG. 3, holds the plunger in its raised position as will presently be described. It will be noted that the plunger has an upwardly extending central pin 44*b* which, when the plunger 44 is raised upwardly, enters a small opening 23*b* in the bottom of spindle 23 as shown in FIG. 8 where the pin 44*b* is then in position to raise the rod 34.

The operation of this invention should now be readily understood. When the computer pack is in use, the bottom, as shown in FIG. 6, is secured to the assembly of the pack of disks shown in FIG. 5 by having the securing nut 25 threaded on the lower end of the spindle 23 as shown in FIG. 8. The cover 26 comes downwardly over the pack of FIG. 5 and enters inside of the rim 24*a* of the bottom 24 and is locked in position by the balls 29 entering the toroidal keeper recess 28*a* as previously described. At this time, the cam 39 secured to the rod 34 in the spindle 23 is in its downward position as shown in FIG. 8 so that the balls 29 lock the cover to the spindle and to the bottom 24 so that the pack is completely enclosed. In using this invention, the nut 25 is first unscrewed from the threads 23*a* at the lower end of spindle 23, thus releasing the bottom 25 from the enclosed pack 22. Referring to FIG. 2, the pack with the bottom removed is now placed on the pedestal 20 of the cleaner stand with the upstanding end 40 of the pedestal entering the frusto-conical recess 22*b* (which formerly received the nut 25). The pack is now rotatable on the extension 40 of the pedestal 20. The operator now grasps the handle 44*a* of the plunger 44 and moves it from the lower recess 42*a* in tubular member 42 to the upper recess 42*b* as shown in FIG. 3. This motion is against the compression spring 37 and the plunger is held in the uppermost position by the handle 44*a* resting in the upper slot 42*b* as seen in FIG. 3. The raising of plunger 44 caused the pin 44*b* to enter through the opening 23*b* in the bottom of the spindle 23 and to engage the lower end of rod 34 and raise it sufficiently to cause the narrower portion of the cam 39*b*, as seen in FIG. 8, to lie radially inwardly of the balls 29. This permits the balls 29 to recede radially inwardly from the position shown in FIG. 8 so that they readily leave the toroidal keeper recess 28*a*, at which time the cover 26 may be removed by lifting on the handle 27. Then the assembly of disks is readily accessible as shown in FIG. 3 so that the individual disks 22*a* may be cleaned by using a tape cleaner brush or by using a very soft cloth or facial tissue wrapped about a wooden stick or the like which may be easily passed between adjacent disks 22*a*. When the computer pack is cleaned, it is readily re-assembled by replacing the cover 26 on the pack in the position of FIG. 3, then lowering the plunger to the position corresponding to the handle 44*a* in the position of FIG. 2, after which the cover 26 locked to the pack 22 may be lifted from the stand and the bottom 24 placed in position by screwing the frustoconical nut 25 on the lower end of spindle 23 as indicated in FIG. 8.

In the use of this invention, it is necessary to have the top cover 26 in position over the disk assembly 22 and locked to the spindle 23 both when the pack is placed on the cleaner stand and before it is removed from the cleaner stand.

What is claimed is:

1. A cleaner stand for a computer pack, which pack comprises a central spindle, an assembly of a plurality of concentric computer disks mounted on said spindle, said assembly having a downwardly opening recess concentric with said spindle, the walls of said recess diverging downwardly in a predetermined pattern, a removable bottom member closing the lower end of said assembly, a securing nut held rotatably centrally of said bottom member and having a securing connection therewith, said nut threaded on the lower end of said spindle and having an outer surface complementary to said walls of said recess, and a cover having a top and depending side walls adapted to completely cover the top and sides of said assembly and when positioned in contact with said bottom completely enclosing said assembly, there being retractable radially extendible projections on said spindle which when extended lockingly engage suitable keeper means in said cover, said projections having mountings in said spindle preventing movement of said projections longitudinally of said spindle, there being a small opening through the bottom of said spindle; said cleaner stand comprising a base, a pedestal rigid with said base and vertically extending therefrom, said pedestal having a rigid upper end complementary to the walls of said downwardly opening recess of said assembly, a plunger having a vertical axis concentric with said pedestal upper end and reciprocatably mounted in said pedestal, means for vertically reciprocating said plunger through said upper end, means for holding said last named means in a vertically raised position, a rod mounted for vertical reciprocation axially of said spindle, said rod extending to the bottom of said spindle, means urging said rod downward, a pin on the upper end of said plunger adapted to pass through said opening in the bottom of said spindle and to reciprocate said rod, and a cam on said rod positioned to engage said radially extendible projections in a lower position of said plunger and to hold said projections outward in locking position, said cam so formed that it permits radial retraction of said projections to an unlocking position in an upper position of said plunger, whereby said bottom member may be removed from said assembly by unthreading said securing nut, and said assembly with cover may be placed on said stand with said upper end of said pedestal snugly entered into said assembly recess and with said plunger in its lower position and said plunger may then be raised to cause said rod cam to move to projection unlocking position thus releasing said cover from said assembly.

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