Sept. 9, 1958 H. JORDAN 2,851,224

ASSEMBLY RETENTION MEANS FOR GARBAGE GRINDER HOUSING UNITS

Filed Aug. 1, 1955 2 Sheets-Sheet 1

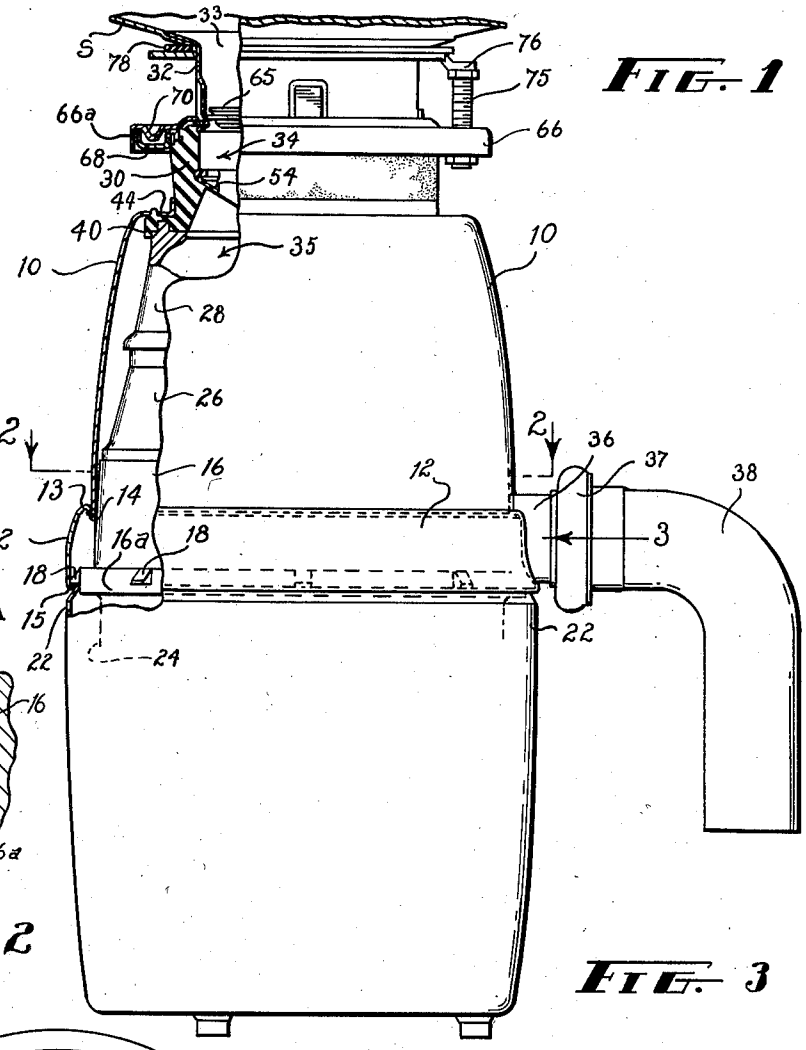


FIG. 1

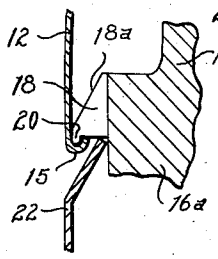
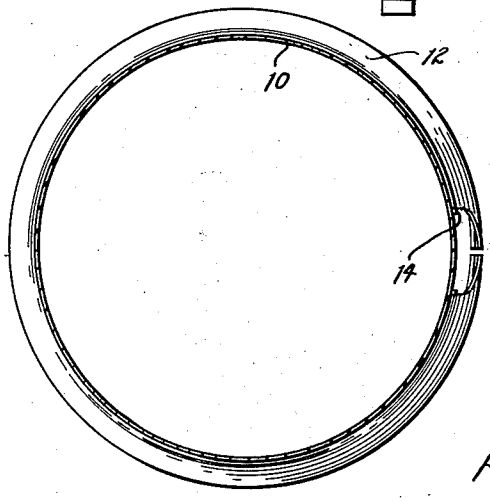
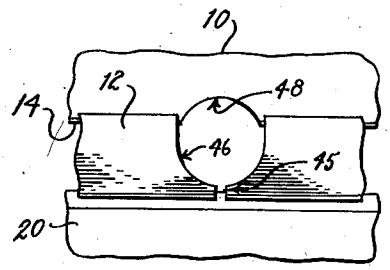


FIG. 1A

FIG. 2

FIG. 3





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FIG. 4

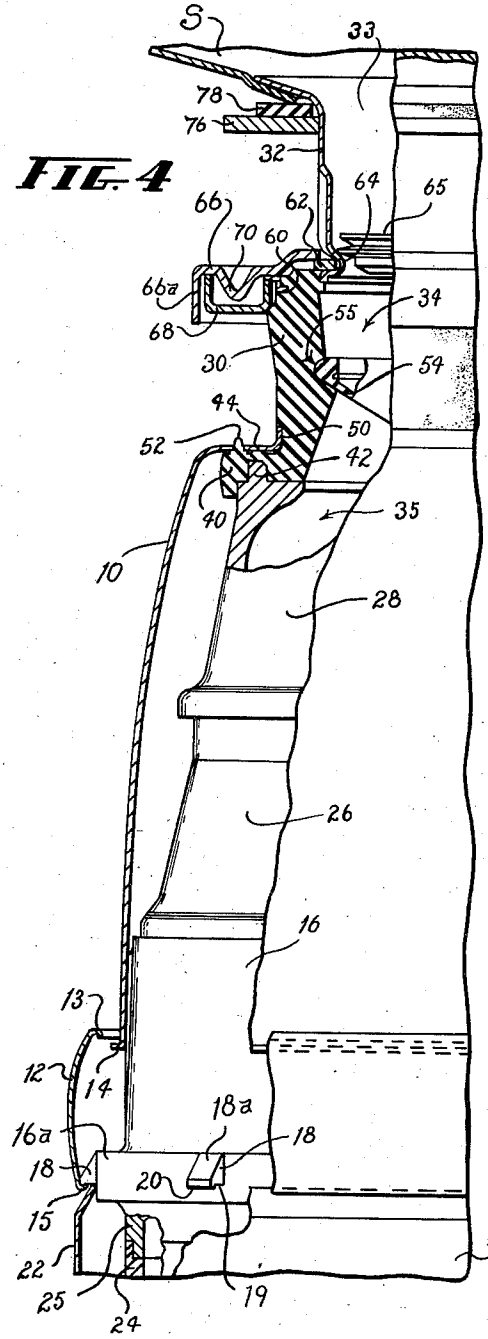
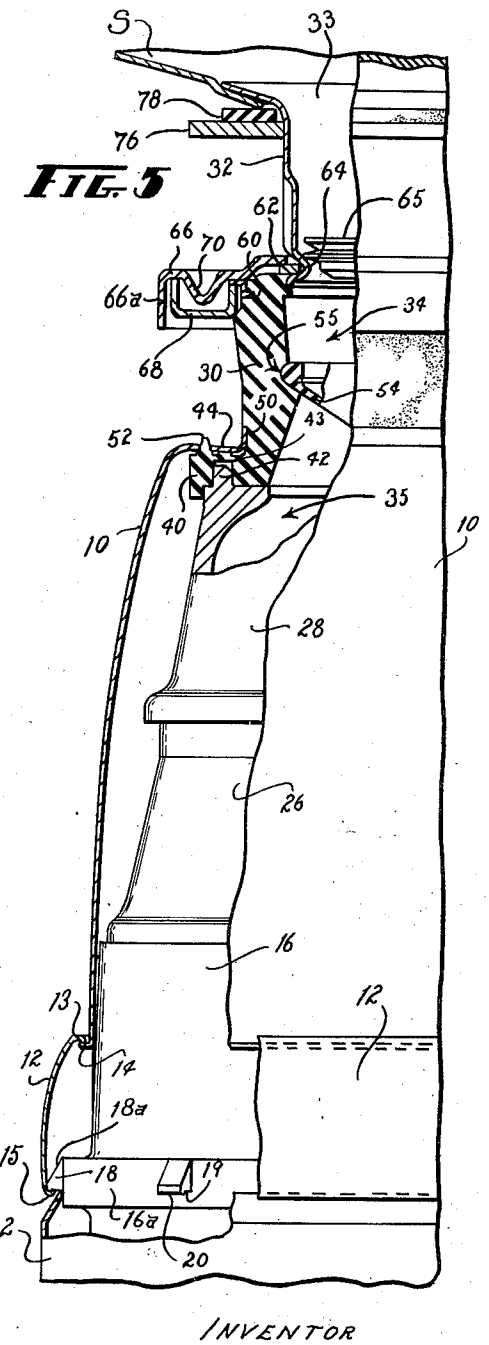


FIG. 5



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ASSEMBLY RETENTION MEANS FOR GARBAGE GRINDER HOUSING UNITS

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11 Claims. (Cl. 241—100.5)

This invention relates to means for assembling various portions of garbage grinder units typically suspended at the drainage outlet openings of conventional kitchen sinks, and especially to means for maintaining the assembly as well as for facilitating the assembling operation.

A principal object of the invention is to provide a convenient and relatively simple assembly retention structure.

A further object is to provide means for such assembly retention having such characteristics that assembly operation is facilitated by the structural aspects of the retention means.

It is at the same time an object of the invention to provide means of the indicated nature which are both simple and economical to manufacture and highly efficient in performance.

Other objects of the invention, and various features of construction thereof, will become apparent to those skilled in this art upon reference to the following specification and the accompanying drawings wherein certain embodiments are illustrated.

In the drawings:

Fig. 1 is partially a side elevation and partially vertical sections, with portions broken away, illustrating a garbage grinder structure assembled and retained in accordance with this invention and suspended from a kitchen sink according to one preferred embodiment;

Fig. 1A is an enlarged sectional detail of an intermediate vertical sectional portion seen in Fig. 1 at the left thereof;

Fig. 2 is a cross section taken on the line 2—2 of Fig. 1 showing the retention means;

Fig. 3 is an elevational detail as indicated by the arrows 3 of Figs. 1 and 2 (adjacent waste discharge portions of the grinder unit being omitted);

Fig. 4 is an enlarged vertical sectional and elevational detail of the upper left half of the structure of Fig. 1 indicating a compressing feature employed as an intermediate step in the assembling operation; and

Fig. 5 is a similar detail indicating the completed step, the parts being disposed in their final, operative, suspended relationship.

There is illustrated in Fig. 1 an outer stamped steel shell 10 which is one element of the present assembly retention means, and also an annular split spring clamping ring 12 which is another important element of the present retention means, the upper edge of the split ring 12 being flanged over inwardly at 13 to snap over an annular, outwardly directed flange 14 on the lower end of the shell 10. The lower edge of the split spring clamping ring 12 is provided with an inwardly directed slightly upturned annular flange 15 opposing the upper flange 13. This lower flange 15 acts to retain an annular housing 16 for a grinder member therewithin, such grinder member including a typical rotary table or the like and the housing member 16 being typically of cast construction so that a lower portion 16*a* is in the nature of a peripherally extending rim, such rim carrying a plurality of

radially projecting lugs or bosses 18 under which the lower flange 15 of the split ring 12 is adapted to engage. The upper face portion of each lug 18 slopes downward as indicated at 18*a* so that the flange 15 may be slid or pushed downward therealong. The lower face of each lug 18 provides a horizontal bearing surface 19 as probably best seen in Fig. 4, there being at the outer edge of such face 19 a shallow downwardly directed lip 20 behind which the uppermost portion of the flange 15 engages and is thereby prevented from easy dislodgement. Also bearing against the under face 19 of each lug 18 is the upper edge of an outer shell 22 which encloses a housing 24 for a motor, such housing 24 interfitting with a depending flange member 25 of the part 16 by which the motor and its housing 24 may be suspended.

The shell 10 and the split ring 12 serve to bind together in assembled relationship the grinder housing 16, an overlying frusto-conical ring member 26 borne on the housing member 16, and, being in turn carried thereon, a second frusto-conical member 28 or the like, defining therewithin a grinding chamber together with the underlying ring member 26 which may also constitute a grinder ring on its inner surface co-operating with elements on the mentioned grinder table within the housing 16. At the upper end of the upper ring member 28 there is secured the lower end of a heavy rubber ring or neck 30 which freely suspends the described underlying parts and is in turn suspended, by intervening mechanism illustrated, from the lower end of a sink drainage sleeve, preferably formed from thin stainless steel indicated at 32 and having an annular outwardly directed sloping lip 33 at its upper end bearing upon and supported by the bottom of a kitchen sink generally indicated at S provided with a typical drainage opening in which the sleeve 32 is positioned.

The rubber suspension ring 30 thus provides a throat 34 through which water and waste from the sink passing through the drainage sleeve 32 enter into the chamber 35 within the assembly of the frusto-conical rings 26 and 28 for disintegration and are discharged through sewer lines as by means of an outlet member 36 shown in Fig. 1 and communicating as through a joint 37 with a discharge conduit 38.

An important feature of this invention resides in the manner of mounting the upper end of the shell 10 with respect to the upper frusto-conical ring 28 and the lower end of the rubber suspension ring 30. This is effected, at least in part, through the compressibility of an integral rubber flange 40 on the lower end of the rubber suspension ring 30 and projecting annularly outward therefrom. If desired, the under face portions of this flange 40 may be vulcanized to the illustrated upper face portions of the metallic ring member 28. Conveniently the upper end of the metallic ring 28 is provided with an upstanding annular bead 42 which projects into a corresponding annular downwardly facing groove in the flange 40, or preferably the portions 42 are simply upstanding studs entering corresponding holes in the flange 40. In either event, and especially in the latter, the body of the rubber of the flange 40 is compressible as from the state illustrated in Fig. 5 into the state illustrated in Fig. 4. Such compressibility may be somewhat facilitated by extra space above the part 42 as seen in Fig. 5 and indicated at 43 therein. The upper end of the shell 10 is provided with a rather broad inwardly directed horizontal flat flange 44 which acts to compress the rubber flange 40 from the condition seen in Fig. 5 into the condition of Fig. 4 when sufficient pressure is applied through such shell flange 44. Thus, by applying such pressure and compressing the rubber flange 40 the outwardly directed flange 14 on the lower end of the shell 10 is moved into the position of Fig. 4 below the flange 13 at the upper end of the split snap ring 12. Thus, when the snap ring 12, having been

separated at its end portions underlying the outlet **36**, has its lower flange **15** brought into position under the lugs **18** and is then moved to position to bring the upper flange **13** of the split clamp ring **12** to overlie the flange **14** of the shell **10**, the compression of the rubber flange **40** may be relieved, whereupon the parts assume the tension position illustrated in Fig. 5, as well as in Figs. 1, 2, and 3 where the end portions of the snap ring **12** come together to form a closed joint indicated at **45** in Fig. 3. Of course, adjacent end portions of the split ring **12** are cut away at **46** to accommodate the outlet member **36** (Fig. 3) and the corresponding overlying portion of the shell **10** is similarly arcuately cut away at **48** to accommodate the outlet **36** from the grinder housing **16**.

Additional features of construction which are conveniently employed in connection with the broad flange **44** at the upper end of the shell **10** are an upstanding integral flange **50** at the inner edge of the flange **44** and a plurality of detents **52** integrally formed in the rubber flange **40** and projecting through corresponding holes in the metallic flange **44**. Thus the parts are all accurately positioned. The throat **34** of the rubber suspension ring **30** is appropriately shaped to lead to the receiving opening of the upper frusto-conical ring member **28** and the ring **30** is of appropriate thickness to provide the necessary weight suspending characteristics. Also, if desired, the throat **34** of the suspension ring **30** may carry a rubber splash guard **54** having a curved annular portion snapped into a curved seat **55** in the inner wall of the ring **30**, the splash guard being provided with a suitable opening or slits to pass waste and water as required.

The upper end of the rubber suspension ring **30** may be connected with the drainage sleeve **32** in some such manner as indicated. This connection includes a small metallic, preferably steel, supporting ring **60** whose inner portion is vulcanized into the upper end of the tough rubber suspension ring **30** and whose outer portion projects laterally therefrom. This ring may be stepped as illustrated to facilitate arrangement of connecting parts. The immediate support on the suspending drainage sleeve **32** is in the form of an annular split snap ring **62** which is received in a groove produced in the sleeve by an inwardly directed rolled bead **64** which at the same time provides at its upper side a bearing surface or seat for any desired stopper **65**. The snap ring **62** is installed after passing up over the outside of the sleeve **32** an appropriate carrying ring **66** which may have an outer downturned flange **66***a* for strengthening purposes and to provide a sort of channel which is downwardly directed and receives an upwardly directed flanged channel ring **68**, the upper edge of whose inner flange engages under the outer edge of the supporting ring **60** vulcanized into the upper end of the tough rubber suspension ring **30**, and the upper edge of whose outer flange portion engages under the outer portion of the carrier ring **66**. If desired, downstruck detents **70** may be employed to aid in positioning the channel ring **68** and increase the section modulus; such detents may be in the form of annular groove-forming portions. These devices are appropriately connected or clamped together as by means of bolts **75** seen in Fig. 1, the upper ends of which may bear against the under side of a compression ring **76** serving to bind and compress a sealing washer **78** at the under side of the sink adjacent its drainage opening where the drainage sleeve **32** is received and supported.

From the foregoing it is evident that the garbage grinder assembly as a whole is readily suspended from the sink drainage sleeve **32** by way of the snap ring **62** disposed in the indicated groove at the lower end thereof, the tough rubber suspension ring **30** being carried from the snap ring **62** by way of its supporting ring **60** carried in its top portion and by way of the suspending clamp rings **66** and **68**. It is also apparent that the grinder housing assembly comprising the top chamber ring **28**, the intermediate grind ring **26**, and the lower ring-like grinder housing member **16** are in turn suspended from the rubber suspension ring **30**, and retained in assembled relation by means of the housing shell **10** carried upon the top of the flange **40** of the suspension ring **30**, and the split clamp ring **12** whose lower flange **15** engages under the lugs **18** and whose upper flange **13** snaps over the bottom flange **14** of the shell **10**, the shell **10** having been forced down from the position of Fig. 5 to compress the rubber flange **40** to the position of Fig. 4 so that the flange **15** of the clamp ring may slip under the lugs **18** and the upper flange **13** may be moved to engage over the mentioned flange **14** as the spring clamp ring **12** is snapped into the closed position as seen in Figs. 1 and 3.

By forming the clamp ring **12** so that, in vertical section, it is somewhat bulged as illustrated, the clamping function is improved and the springing of the upper flange **13** into clamping position is facilitated. This is true also of the snapping of the lower flange **15** of the clamp ring **12** into position under the lugs **18**. Additionally, the sloping faces **18***a* of the lugs **18** facilitate movement of the clamp ring **12** downward over the lugs into supporting position. As previously indicated, retention of the clamp ring **12** in such position, without unintended slipping off thereof, is assured by the depending lips **20** at the outer edges of the lugs **18**, as possibly better seen in the enlarged detail of Fig. 1A.

It will be appreciated that the compression of the rubber flange **40** by pressing the shell **10** and its flange **44** downward is relied upon to facilitate separation of the clamp ring **12** from the shell **10**, through disengagement of the upper flange **13** of the clamp ring **12** from the lower flange **14** of the shell **10**, when the parts are to be disassembled, as in the case of repairs or replacement.

I claim as my invention:

1. A waste disposal device assembly including: plural circular members assembled in vertical series for enclosing grinding means and a receiving chamber having a top entrance opening, the lowermost member having peripheral outer radial projection means; a spring clamp ring about the lower circular member and having an inwardly extending flange at its lower edge engaged under said projection means and having an inwardly extending engagement flange at its upper edge; an outer shell member surrounding an upper circular member, said shell having outwardly extending flange means at its lower end engaged under said upper engagement flange of said clamp ring to support the latter; means at the top of said outer shell to engage over the upper end portion of the upper circular member and retain the assembly clamped together; and compressible annular means on the top of said upper circular member, said means on the top of said outer shell being a flange inturned over such compressible means and clamping the latter on said upper member.

2. An assembly as in claim 1 including a rubber suspension ring extending upward from said circular members and carrying at its upper end means to suspend the assembly, said compressible means being an integral radially extending annular flange on the lower end of said rubber suspension ring.

3. A waste disposal device assembly including: plural circular members assembled in vertical series for enclosing grinding means and a receiving chamber having a top entrance opening, the lowermost member having peripheral outer projection means; a spring clamp ring about the lower circular member and having flange means at its lower edge engaged under said projection means and having at its upper edge a laterally extending engagement flange; an outer shell member surrounding an upper circular member, said shell member having laterally extending flange means at its lower end engaged under said upper engagement flange of said clamp ring to support the latter, said clamp ring being a split ring providing abutting ends; and means at the top of said outer shell member to engage over the upper end portion of the

upper circular member and retain the assembly clamped together.

4. Assembly retention means for a garbage disposal device including: a vertical shell having at its upper end an inturned flange to bear upon means to be retained and defining an opening into such means, said shell having at its lower end an out-turned flange to receive means to be supported; and a clamp ring having at its upper end an inturned flange bearing upon and supported by said flange at the lower end of said shell, and having at its lower end an inturned flange to engage under projecting peripherally arranged means to be supported, said clamp ring being a spring ring split for expansion to spring over said lower flange of said shell and said projecting means.

5. Retention means as in claim 4 wherein said clamp ring is outwardly bulged in vertical section.

6. An assembly including: plural circular members supported one above another in a vertical series; radially projecting means disposed peripherally on the bottom member; compressible means disposed on the top of the top member in sealing relation; suspending means for said assembly extending upward above said compressible means; an outer shell surrounding upper circular member portions and having at its top inwardly projecting flange means bearing upon said compressible means, the lower end of said shell having outwardly extending supporting flange means; and a clamp ring having upper inwardly projecting flange means bearing upon said outwardly projecting flange means of the lower end of said shell, and having lower inwardly projecting flange means engaged under said peripheral means of the bottom member in supporting relation, said compressible means providing sufficient compressibility for depression of said shell downward to bring its lower flange means below the upper flange means of said clamp ring for engagement of the latter over the lower flange means of said shell, and for disengagement of such flange means for each other, said compressibility providing for expansion binding the parts together upon release of applied pressure following engagement of such flange means with each other.

7. An assembly as in claim 6 wherein said clamp ring is a split spring ring providing for springing the lower flange means of said clamp ring beyond said peripheral means and under the latter into supporting engagement therewith.

8. An assembly as in claim 7 wherein said peripheral means provides downwardly and outwardly sloping surfaces to guide said lower flange means of said clamp ring downward into position to engage under such peripheral means.

9. An assembly as in claim 7 wherein said peripheral means has downwardly directed lip means at the outer edge of the under side thereof to avoid slipping off laterally of said lower flange means of said clamp ring.

10. A waste disposal device assembly including: plural circular members assembled in vertical series for enclosing grinding means and a receiving chamber having a top entrance opening, a lower circular member having peripheral projection means extending therefrom; a spring clamp ring about said lower circular member and having laterally extending flange means at its lower edge engaging under said projection means and having at its upper edge laterally extending engagement flange means; an outer shell member surrounding an upper circular member, said shell member having laterally extending flange means at its lower end engaged with said upper engagement flange means of said clamp ring and suspending the latter and said lower member through the medium of said flange means; and means at the top of said outer shell member engaging over the upper end portion of said upper circular member and retaining said members in assembled relation.

11. Assembly retention means for a garbage disposal device, including: a vertical shell having at its upper end inturned flange means to bear upon means to be retained and defining an opening into such retained means, said shell having at its lower end flange means to receive and suspend means to be supported; and a clamp ring having at its upper edge flange means engaging and suspended by said flange means at the lower end of said shell, said clamp ring having at its lower edge flange means engaging and suspending peripherally arranged projecting means of a member to be suspended, said clamp ring being a spring ring whose upper and lower flange means are snapped into suspending engagement with the flange means of said shell and with said projecting means.

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