

July 21, 1959

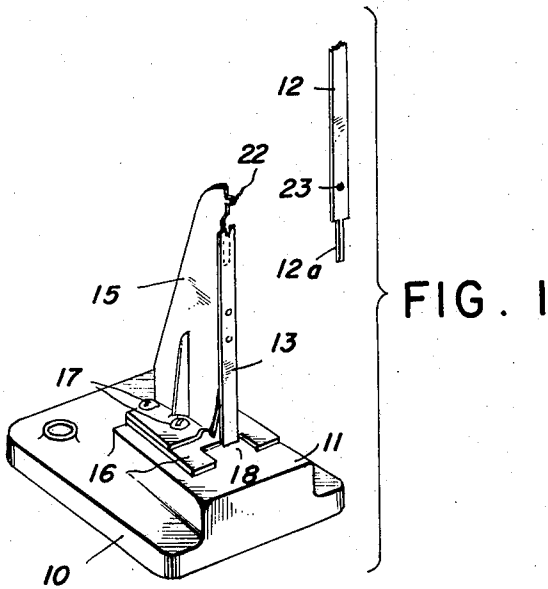
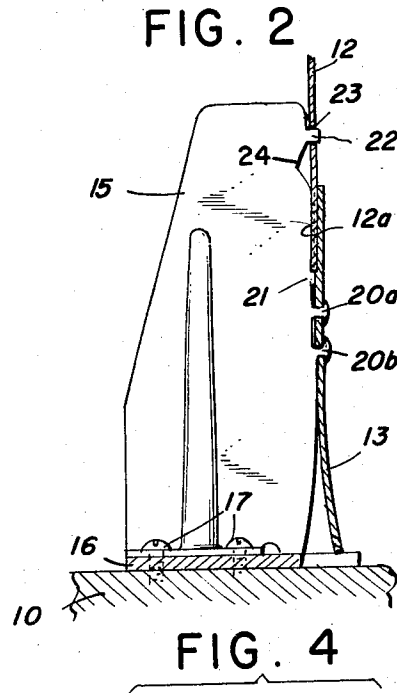
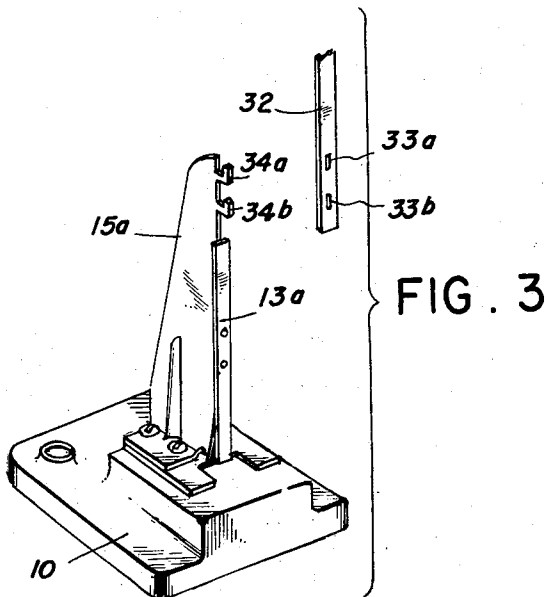
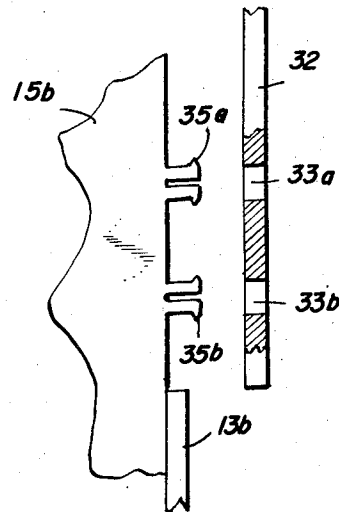
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2,895,616

DISPENSERS FOR OPEN RETAINING RINGS

Filed Aug. 26, 1954

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

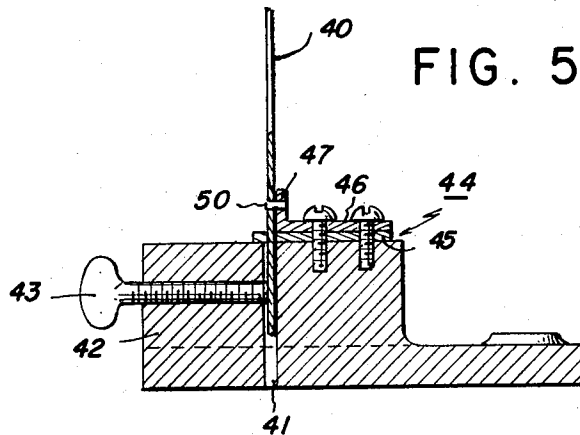


FIG. 6

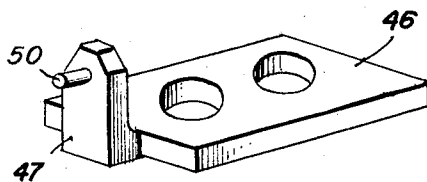
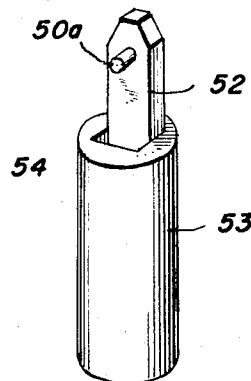


FIG. 7



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2,895,616

DISPENSERS FOR OPEN RETAINING RINGS

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Application August 26, 1954, Serial No. 452,373

3 Claims. (Cl. 211—59)

This invention relates to improvements in dispensers for open retaining rings, of the general type disclosed in my prior applications Serial Nos. 371,359 and 371,360, filed July 30, 1953, now Patents Nos. 2,712,398 and 2,735,581, respectively, and more particularly to an improved connection between the removable stack rod of such dispensers and the fixed part designed to support same.

In retaining ring dispensers of the character under consideration, the open retaining rings to be dispensed, especially when of the E-type, are supplied stacked on a so-called stack rod and the dispensers are loaded by securing the stack rod in place on a fixed part of the dispenser, either by inserting it into a slot provided in said fixed part wherein it is retained by angled flanges as disclosed in my aforesaid Patent No. 2,712,398, or by fastening it in place in a suitable hole in the fixed part with a thumb screw as disclosed in my Patent No. 2,735,581.

Continuing experience with retaining ring dispensers employing a stack rod mounted and secured as aforesaid revealed that the connection between said stack rod and the fixed part of the dispenser was not adequate under certain unfavorable conditions. For example, when the dispenser was set up for use on a table or bench subjected to impacts or vibrations, or was itself exposed to impacts, the stack rod was likely to move or tip in sidewise direction, even to the extent of the rings stacked thereon falling off or the stack rod itself becoming dislodged.

Accordingly, a principal object of this invention is the provision, in a dispenser for open retaining rings, of an improved connection between the stack rod and the fixed part of the dispenser which renders said rod extremely stable in all conditions of use, and more particularly, secures it against any undesirable lateral movement with respect to the dispenser part with which it is associated, as might result in the rings falling from the stack or the stack rod itself becoming dislodged from the dispenser.

More particularly, it is an object of the invention to provide a simple yet highly effective connection between the stack rod and fixed part of a dispenser for retaining rings which supplements the existing connection provided between said parts to the degree rendering the stack rod extremely stable and precluding it from partaking of any lateral movement.

A still further object of the invention is to provide, in a dispenser of the stated character, a highly effective pin-and-hole form of connection between the movable stack rod and the fixed part of the dispenser with which the stack rod cooperates, which is so constructed and arranged as to adequately mount and secure the stack rod with retaining rings stacked thereon.

The above and other objects and advantages of the improved stack rod connecting means according to the invention will appear from the following detailed description thereof, reference being had to the accompany-

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ing drawings illustrating variant forms of such a connection, wherein—

Fig. 1 is a perspective view of a dispenser for open retaining rings incorporating one form of stack-rod connecting means of the invention for use in securing the stack rod, which is separately shown, to the fixed part of the dispenser;

Fig. 2 is an enlarged side view of the dispenser illustrating the manner in which the stack rod assembles to the dispenser;

Fig. 3 is a view similar to Fig. 1, illustrating another form of connection between removable stack rod and dispenser fixed part;

Fig. 4 is a similar view illustrating yet another form of connection between stack rod and dispenser;

Fig. 5 is a section taken through a form of retaining ring dispenser of the type wherein the stack rod is inserted in a hole in the base, which incorporates the improved stack-rod connecting means of the present invention;

Fig. 6 is a detail view of the guide plate and its guide post employed in the Fig. 5 form of dispenser; and

Fig. 7 is a perspective view illustrating a variant guide post supporting means as might be employed in the Fig. 5 form of dispenser.

As is now well known from my prior applications, retaining ring dispensers are designed to be operated by a so-called applicator tool of the type disclosed in Patent No. 2,483,379, dated September 27, 1949, to Brell, whose action when it is properly cooperated with a loaded dispenser is to grip within its spring jaws the lowermost ring of the stack thereof supported on a dispenser base and maintained in stack formation either by a so-called stack rod or a rail forming a lower continuation thereof, and thereupon to withdraw said lowermost ring from the stack, whereupon the stack of rings settles the distance of one ring thickness for the next operation of the applicator.

Referring to Fig. 1, illustrating a retaining ring dispenser of the general type disclosed in my aforesaid Patent No. 2,712,398, such comprises a rectangular base 10 having a raised portion whose flat top provides a horizontal working surface 11. A plurality of open retaining rings, preferably of the E-type, are adapted to be maintained in stack formation on said working surface by means of a removable stack rod 12 and a spring rail 13 forming a lower extension of the stack rod. Preferably, the retaining rings to be dispensed are supplied stacked on the removable stack rod 12, the stack of rings and the rod forming a package which is adapted to be inserted as such in the dispenser, whereupon the stack of rings settles to the lower end of rail 13, thereby continually presenting the lowermost ring to the action of the applicator.

In the dispenser shown, the spring rail 13 forming the lower extension of the stack rod 12 is affixed to an upright bracket 15 which, together with an abutment plate 16, is secured to the working surface of the dispenser base as by screws 17. It will be understood that the thickness of the abutment plate 16 corresponds to the axial thickness of the rings being dispensed, and that its front or ring-abutting edge is provided with a cut-out 18 (Fig. 1) to receive the jaws of the applicator, as is well understood. As best seen in Fig. 2, the spring rail 13 is secured to the front edge of the bracket 15 intermediate the upper and lower ends of said rail, and said lower end is spaced approximately the thickness of a single retaining ring above the working surface 11. Moreover, said free lower end of the spring rail 13 is curved forwardly from said bracket front edge, whereby the lower rings of the stack are normally spaced forwardly of the front edge of the abut-

ment plate cut-out 18. Such permits the ring or rings immediately above the lowest ring which is pressed against the edge of cut-out 18 by the applicator to shift rearwardly with respect to said lowest ring, all as disclosed in my aforesaid Patent No. 2,712,398.

As also seen in Fig. 2, securement of the spring rail 13 to the front vertical edge of the bracket 15 may be effected by means of integral pins 20a, 20b which project from said front edge and enter holes drilled in the spring rail, said pins being peened over so as to function as rivets which fixedly secure the spring rail to the bracket. It will now be observed that the aforesaid points of connection of rail to bracket are spaced a substantial distance downwardly from the upper edge of the spring rail, and from Fig. 2 it will be seen that there is provided a slot-like spacing between the rear face of the upper end portion of said spring rail and the front edge of the bracket. This spacing terminates at its lower end in a bracket-edge lug 21, and is preferably formed in part by a groove milled in the rear face of the spring rail. As will be explained, the purpose of this spacing and milled groove is to provide a slot to receive the lower end of the stack rod, or more preferably an attaching tongue extending beyond said lower end.

It will also be seen from Fig. 2 that the upper end of the spring rail 13 terminates a substantial distance below the top of the bracket 15, thus to expose a corresponding distance of the bracket edge against which the stack rod 12 may seat. As forecast above, said stack rod is provided at its lower end with an elongated, narrow-width tongue 12a which is adapted to enter the aforesaid space or slot between the upper end portion of the spring rail and the front edge of the bracket 15. By proper dimensioning of this space including the milled groove in the rail so that the tongue 12a fits snugly thereon, and considering that the lower end of the stack rod proper also seats against the short length of the edge of the bracket 15 which extends above the rail 13, it follows that there is afforded a stack rod to bracket support connection which is reasonably secure under normal operating conditions. However, as explained in the foregoing, the aforesaid connection fails to provide the stack rod with the requisite stability under unfavorable conditions likely to be encountered in the use of a retaining ring dispenser.

Accordingly, to improve the security of the connection of the stack rod 12 to the bracket 15 and to render the stack rod stable even under adverse conditions of use, the invention provides an additional pin-and-hole connection 22 and 23 designed particularly to prevent any lateral or tipping or turning movement of the removable stack rod 12. Referring particularly to Fig. 1, such connection comprises a preferably elongated locking pin 22 projecting from the top edge portion of the bracket 15 and a registering hole 23 provided in the lower end of the stack rod 12 above the tongue 12a thereof. By such a connection, when said tongue is properly inserted in the aforesaid space provided to receive same between the upper portion of the spring rail 13 and the front edge of the bracket, the locking pin 22 will snap into the hole 23 provided in the stack rod, whereupon the latter will be effectively secured against any lateral displacement or tilting movement consequent, for example, to the base of the dispenser being subjected to impacts, or the table or bench on which the dispenser is set up for use being similarly subjected to such impacts. As also seen in Figs. 1 and 2, the front edge of the bracket 15 between the tongue-receiving space and the aforesaid locking pin 22 may be slightly recessed as at 24, to facilitate insertion of the stack rod tongue 12 into said space without undue interference from said pin.

Referring to Fig. 3, such illustrates a modified connection between a stack rod devoid of a tongue corresponding to the previously described stack rod tongue 12a and a dispenser bracket 15a of the type earlier described. In

this modified form of connection, the stack rod 32 is provided in its lower end portion with two elongated holes 33a, 33b of length as to fit over two vertically spaced, upwardly opening bayonet-type hooks 34a, 34b formed on or affixed to the bracket so as to protrude forwardly from the front vertical edge thereof, the bills of the hooks being spaced from said edge the thickness of the stack rod. The aforesaid bracket hooks and stack-rod holes permit the stack rod 32 to be connected to the bracket 15a simply by registering the holes 33a, 33b with the hooks 34a, 34b and thereupon pressing the stack rod downwardly the slight distance necessary to engage the bills of the hooks with the material of the stack rod defining the upper edges of said holes. In addition to providing a form of connection between stack rod and bracket which precludes any possibility of the stack rod moving laterally or turning angularly with respect to the bracket, the aforesaid pin and slot connection, in doing away with the stack rod tongue, eliminates any requirement of milling a groove therefor in the rear face of the spring rail 13a, as was necessary with the form of connection described in Fig. 1.

As seen in Fig. 4, snap pins 35a, 35b may be substituted for the hooks 34a, 34b characterizing the Fig. 3 form of connection between stack rod 32 and bracket. Illustratively, said snap pins may be fashioned to the form of flat studs of split construction, each terminating in a head which is beveled in two directions as shown, so that assembly and disassembly of the stack rod 32 with and from the mounting bracket 15b may be achieved with a cam action. Preferably, the aforesaid stack-rod holes 33a, 33b which receive said snap pins are slightly undersize with respect to the snap pin heads. Accordingly, when the stack rod 32 is snapped over the vertically spaced pins 35a, 35b, it secures itself to the dispenser bracket 15b against any side movement consequent to the dispenser itself or the table or bench on which it is mounted being subjected to impact forces, vibrations, etc.

Referring to Fig. 5, such illustrates a pin-and-hole connection between dispenser stack rod and fixed bracket, generally as shown in Fig. 1, applied to a dispenser of the form disposed in my aforesaid Patent No. 2,735,581. In such a dispenser, the lower end of the stack rod designated 40 projects into a vertical hole 41 provided therefor in the dispenser base 42, and said rod is usually secured in place by a thumb screw 43 threaded into the base.

Secured against the top or working surface of the base is a guide assembly generally designated 44 comprising a lower abutment plate 45 which preferably is formed with a tool-jaw receiving recess corresponding to the recess 18 in abutment plate 16 (Fig. 1) and an upper plate 46, from whose forward edge extends a guide post 47 which is disposed just to the rear of the stack rod 40. As explained in my aforesaid prior application, the guide post has height and width such that the open ends of the lower retaining rings stacked on the rod 40 may loosely engage its side edges, and its function is to hold said lower rings properly oriented, thereby to facilitate withdrawal of a ring in the grip of the applicator from the ring stack.

According to the invention, the guide post 47 is formed with a forwardly extending lock pin 50 which is adapted to register with and enter a hole provided therefor in the stack rod having the proper diameter to receive same snugly. By the aforesaid pin-and-hole connection between guide post 47 and stack rod 40, the stack rod may be positively located at the proper height, and thus it eliminates requirement that the hole 41 in the base have the exact depth to locate the stack rod at the proper elevation, as was necessary in some prior dispensers of this type.

A stack rod support pin functioning as aforesaid may also be provided on a guide post as used in a so-called

bushing type of dispenser, in which, referring to Fig. 7, a guide post 52 similar to that numbered 47 is carried by a bushing 53 which is adapted to be assembled in a suitable receiving bore provided therefor in the dispenser base. The bushing is provided forwardly of the guide post 52 with a hole 54 into which the lower end of a stack rod, which may be identical with the previously described stack rod 40, is inserted. Said guide post carries a pin 50a (corresponding to the pin 50) adapted to enter a hole in the stack rod. Hence, upon the stack rod being inserted in said bushing hole and the guide pin 52a seating in the hole provided therefor in the stack rod, the stack rod is firmly held to the bushing 53 and thereby to the dispenser base at the proper elevation and without any possibility of the stack rod being moved laterally under impact forces applied to the dispenser, or the table or bench on which it is mounted.

Without further analysis, it will be seen that all forms of the invention as described and illustrated provide a simple yet highly effective support and connection for the stack rod of a dispenser of the type adapted to dispense retaining rings by the use of a so-called applicator tool, which so functions as to preclude any possibility of the stack rod becoming accidentally loosened or dislodged, or of moving laterally under impact forces which may be applied directly to the dispenser or to the table or bench upon which said dispenser is mounted for use, and thereby greatly increases the stability of the stack rod. Despite the secure connection of the stack rod provided according to the invention, it may be readily assembled to and disassembled from the dispenser as to a requirement for stack rods of the type on which a plurality of retaining rings to be dispensed is packaged and by means of which the dispenser is loaded with a supply of the rings.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying

drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a retaining ring dispenser adapted to mount a plurality of the retaining rings to be dispensed in stack formation on a removable stack rod and to present the lowermost ring of the stack to the action of a ring gripping and withdrawing tool, the combination with said stack rod of a fixed stack rod support, a rail member affixed to a front edge of said support and adapted upon assembly of the stack rod to form a fixed lower continuation thereof, said rail member terminating at its upper end below the upper end of the support, the lower end portion of the stack rod upon assembly thereof seating against the edge portion of said support which extends above said rail member, and a detachable connection between said support and said stack rod comprising a plurality of protrusions on said edge portion of the support and a plurality of registering and cooperating holes in said lower end portion of the stack rod.

2. A retaining ring dispenser as set forth in claim 1, wherein said protrusions comprise vertically spaced and upwardly opening hooks.

3. A retaining ring dispenser as set forth in claim 1, wherein said protrusion comprises vertically spaced split studs having heads which are oppositely beveled.

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