Jan. 21, 1958 C. J. RED, JR 2,820,383

NUT STARTERS AND DISPENSER

Filed Feb. 11, 1955

FIG. 1.

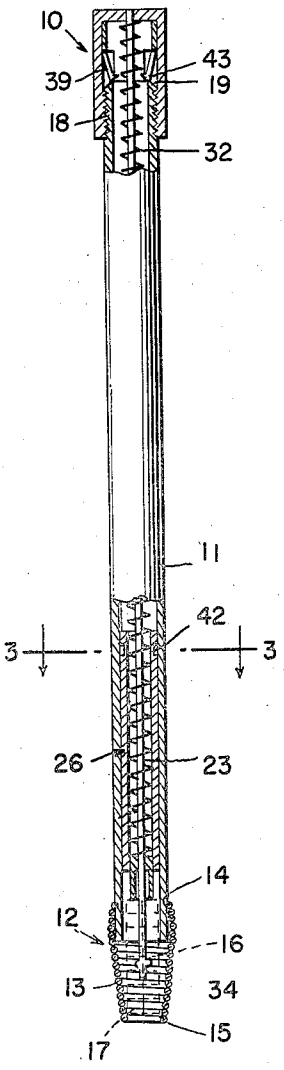


FIG. 2.

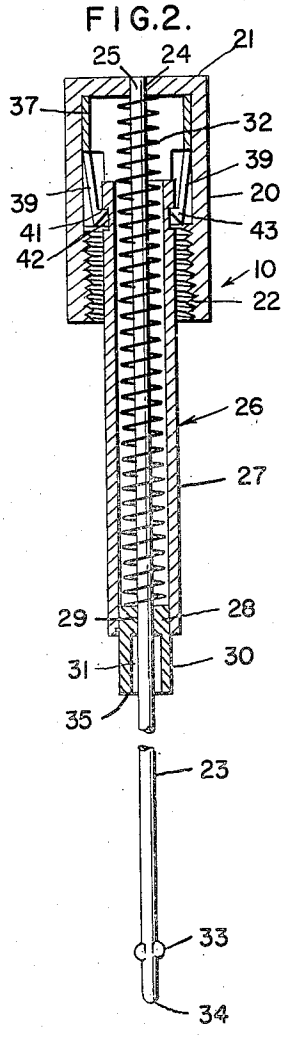


FIG. 5.

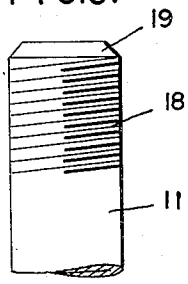


FIG. 3.

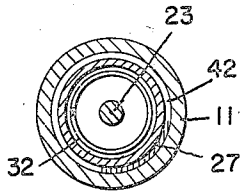


FIG. 4.

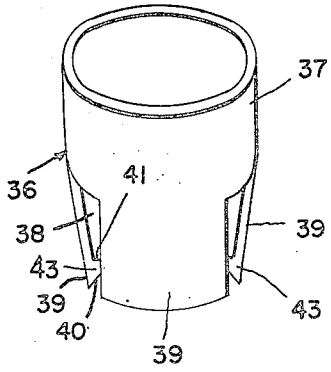
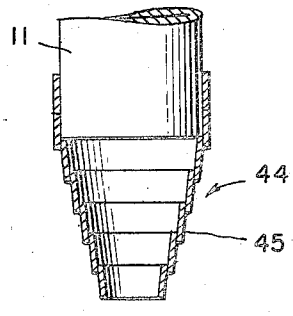


FIG. 6.



Inventor

Calvin Jackson Red, Jr.

By Shoemaker & Mattare

ATTYS.

United States Patent Office

2,820,383

Patented Jan. 21, 1958

2,820,383

NUT STARTERS AND DISPENSER

Calvin Jackson Red, Jr., Washington, D. C.

Application February 11, 1955, Serial No. 487,559

8 Claims. (Cl. 81—64)

This invention relates to nut starting and dispensing mechanisms in general and in particular relates to improvements in the subject matter of my co-pending application Ser. No. 471,966, filed November 30, 1954.

In nut starters and dispensers of the type herein generally disclosed, one outstanding problem is to provide some means for rapidly and easily loading a supply of nuts in the device and to do so accurately and without fear of misaligning the nuts during the loading operation. This invention, the thereof, has for one object the provision of improved loading mechanism for nut starters and dispensers.

Another object of this invention resides in the provision of an improved loading mechanism for nut starters and dispensers which also acts as the feed mechanism during dispensing operations.

A further object of the invention lies in the provision of structurally related parts wherein a spring-urged feed block member is utilized when the device is in assembled position to feed the nuts toward the dispensing head whereas when certain parts are disassembled the feed block may be held in a retracted position to readily permit a supply of nuts to be loaded.

Still another object of the invention is to provide a mechanism in accordance with the preceding object wherein the feed block is automatically released when the parts are reassembled.

A further object of the invention is to provide an improved form of nut dispenser which comprises two basic separable assemblages, a housing and dispensing head assemblage and a combined loading and feeding assemblage, the combined assemblage being adapted when removed from the housing and dispensing head assemblage to be urged in part to a retracted position wherein a supply of nuts may be readily assembled thereon, the reengagement of the assemblages being effective to release such parts from the retracted position so that they may then function in a manner for feeding the supply of nuts toward the dispensing head of the housing and dispensing head assemblage.

Still another object of this invention is to provide an improved nut starter and dispenser in accordance with the preceding objects wherein the dispensing head is formed from a tapered, helically wound spring with the smallest end of the spring of lesser diameter than the inside diameter of the housing such that nuts will be dispensed one at a time from the mechanism.

Still another object of this invention is to provide an improved form of nut dispenser and starter which includes a tube provided with a dispensing head at one end thereof and at the other end with a removable cap, the cap incorporating an elongate aligning rod which extends throughout the length of the tube and which has slidably disposed thereon a spring-urged feed block, there being provided mechanism within the cap for holding the feed block in a retracted position whereby to expose a major portion of the aligning rod such that the supply of nuts may be readily stacked thereon, the holding means being engaged by the tube when the cap is assembled thereon to be urged to an inoperative position whereby the feed block will be released from its grasp.

With the above and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the acompanying drawings and pointed out in the claims hereto appended, it being understood that various changes into the form, proportions, and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Fig. 1 is an elevational view partly in section showing the improved form of nut starter and dispenser;

Fig. 2 is a sectional view taken through the combined loading and feeding assemblage, showing the feed block in the retracted position;

Fig. 3 is a transverse section taken along the section line 3—3 of Fig. 1 showing parts in enlarged scale;

Fig. 4 is an enlarged perspective view of the latching ring mechanism;

Fig. 5 is an enlarged elevational view showing the cap end of the tube and indicating the manner in which the same is formed to most readily perform the latch releasing operation;

Fig. 6 is an enlarged sectional view showing a modified form of dispensing head.

With reference now most particularly to Figs. 1 and 2, the mechanisms shown therein will be seen to consist of two basic assemblages which in themselves are composed of several parts which are more or less fixed to each other, the two assemblages being readily separable for proper functioning of the mechanism.

One assemblage, a combined feeding and loading assemblage, is indicated generally by the reference character **10** and is shown in Fig. 2, whereas the other assemblage consists of an elongate tube **11** and a dispensing head **12** fixed to one open end thereof. The dispensing head **12** consists of a tapered, helically wound spring wire **13** having its largest end frictionally engaged upon the corresponding end of the tube **11** at which point it will be noticed that the tube may be grooved annularly as at **14** so as to receive the end coil at the largest end of the spring. This, taken in conjunction with the grip of the spring upon the tube, provides sufficient means for normally holding the dispensing head on the tube such that the parts may not be readily separated from each other.

The small end **15** of the dispensing head **12** is of slightly less internal diameter than the inner diameter of the tube **11** and the nuts **16** disposed therein such that this small end will normally hold the supply of nuts within the tube and prevent their removal therefrom. However, as disclosed in my co-pending application Ser. No. 471,966, filed November 30, 1954, once the lowermost nut in Fig. 1 designated by the reference character **17** has been engaged upon a stud, bolt or the like, withdrawal of the dispensing mechanism will permit such end nut and such end nut only to remain on the stud, bolt or the like, due to the expansion permitted on the lower end of the dispensing head. It will be noted that the dispensing head during its expansion effects an unwinding action thereof such as to be accomplished to a slight degree by springs of this nature. This degree of unwinding is sufficient to permit the smallest end of the spring to expand and permit the dispensed nut to pass therethrough. The dispensing head being formed from the helically wound spring is, of course, extremely flexible and this is advantageous in reaching inaccessible spots.

The opposite end of the tube 11 is provided with external threads 18 as will be evident from Fig. 5 and the extremity of the tube at this point is provided with a beveled face 19 the purpose of which will be presently apparent. The combined feeding and loading assemblage 10 is adapted to be engaged on the threaded end 18 of the tube and for this purpose it will be seen that the assemblage 10 includes a recessed cap member having cylindrical main body portion 20 and an end cap portion 21 closing one end of the cylinder. The opposite end is internally threaded as indicated by the reference character 22 and this portion is adapted to engage upon the threads 18 of the elongate tube 11 such that the cap is rigidly affixed thereto. The assemblage 10 also includes an elongate aligning rod 23 which has one end affixed by means preferably of a pressed fit into an aperture 24 centrally located in the end cap portion 21, this engagement of the aligning rod end 25 in the aperture 24 being sufficient to rigidly affix the aligning rod to the cap. Slidably disposed on the aligning rod 23 is a feed block mechanism 26 which includes an elongate sleeve 27 having a plug member 28 rigidly secured within one end thereof. The plug 28 is centrally apertured as at 29 so that the plug is snugly but slidably engaged upon the aligning rod. The outer end portion 30 of the plug is recessed or counterbored as indicated by the reference character 31, the purpose of this construction being presently apparent.

A coil spring 32 is disposed around the aligning rod 23 to abut against the inner surface of the end cap 21 with its opposite end abutting the inner surface of the plug member 28. Since the sleeve 27 is of substantial length, and since its outer diameter is such as to snugly but slidably engage within the elongate tube 11, it will be readily apparent that the aligning rod 23 is constrained to remain in concentric relation within the elongate tube 11 when the parts are assembled as indicated in Fig. 1. This assures that the stack or supply of nuts 16 will be properly aligned with the dispensing head 12 and will be fed and dispensed in a most expeditious manner.

To prevent the spring 32 from ejecting the feed block 26 from the aligning rod, the aligning rod is provided at its outer extremity or free end portion with a deformed or upset portion 33 transversely thereof such that at this point the aligning rod is of non-circular cross section. Thus when the feed block 26 reaches the point on the aligning rod wherein the aperture 29 is adjacent the deformed portion 33, the feed block will be stopped in its movement along the aligning rod. The extremity 34 of the aligning rod projects beyond the dispensing head end of the tube 11 and terminates inwardly from the end 15 of the dispensing head so as to assure that the end nut 17 may be properly engaged upon an associated stud, bolt or the like. At the same time, to assure that all of the nuts in the supply will be urged to a position such that they may be engaged upon a stud or the like, the plug 28 is provided with a counterbore 31 which permits the end face or extremity 35 of the plug to extend beyond the extremity 34 of the aligning rod such that the last one or two nuts in the supply will be assured of proper positioning within the smaller end of the dispensing head.

The latching ring assemblage shown in Fig. 4 in enlarged relation and indicated by the reference character 36 comprises a short sleeve or tube 37 which is provided with a plurality of longitudinally extending notches 38 which extend inwardly from one end thereof and separate that end portion into a plurality of individual spring fingers 39. This leaves a main body or ring portion of annular cross section which is of such external diameter as to be snugly received within the sleeve portion 20 of the end of the cap and it will be noted from Fig. 2 that the length of the member 36 is such that the spring fingers 39 terminate just short of the threads 22. These extremities of the spring fingers are of wedge-shaped configuration to present tapered cam surfaces 40 and the flat stop surfaces 41 in a manner shown most clearly in Figs. 2 and 4.

The inner end of the sleeve portion 27 of the feed block 26 is provided with an annular groove 42 within which the spring finger ends are normally urged. That is, the spring finger portions of the latching member normally assume the position shown in Figs. 2 and 4 such that the tang portions 43 thereof are urged into the annular groove 42 when the feed block has been disposed in such retracted position, thereby holding the feed block assemblage in the retracted position to expose a major portion of the aligning rod 23 beyond the plug 28. Thus, when the combined loading and feeding assemblage is removed from the elongate tube 11 and the feed block disposed in the retracted position, a supply of nuts may be readily stacked upon the aligning rod while the combined assemblage is held in the inverted position with respect to Fig. 2. Thereafter, when the supply of nuts is ample, the tube 11 is slipped over the stack of nuts and the outer end of the feed block and threadedly engaged with the cap. When the threaded engagement has been accomplished to such point that the beveled end face 19 of the tube 11 engages the cam surface 40 of the spring fingers 39, the spring fingers will be spread outwardly until the tangs 43 are entirely removed from the groove 42 at which point the coil spring 32 will urge the feed block 26 along the aligning rod 23 to feed the stack of nuts into the proper position to start the dispensing operation. This, of course, enables the operation of loading nuts into the device to be accomplished very easily and rapidly without fear of misaligning the supply of nuts within the tube or of dropping or losing the nuts while being loaded.

Attention is now directed to Fig. 6 wherein a modified form of dispensing head is shown. The modification is indicated generally by the reference character 44 and will be seen to consist of a tapered, helically wound spring strip 45 having its larger end frictionally engaged upon the associated end of the tube 11 and having the edges of the strip overlapped such that each adjacent pair of coils is partially nested within each other in the manner shown. The operation of this dispensing head is similar to the head 12 inasmuch as the lowermost coils will be permitted to expand sufficiently to permit a nut to pass therethrough by an unwinding action of the spring strip.

I claim:

1. A nut dispenser comprising, an elongate tube adapted to receive a supply of stacked nuts therein, an elastic dispenser head presenting a passageway beyond one end of the tube of smaller diameter than the inner diameter of the tube, whereby to normally prevent release of nuts through said one end of the tube, said dispenser head being expandable to permit dispensing of an individual nut, means within the tube for urging a supply of nuts toward said dispenser head, said means including a removable cap for the other end of the tube, an aligning rod fixed to said cap and extending centrally within said tube, a feed block slidably disposed on said rod and normally spring urged toward the free end thereof, and latch means for removably fixing the feed block to said cap to expose the major portion of said rod for ready reception of a supply of nuts thereon.

2. In a nut dispenser, an elongate tube adapted to receive a supply of stacked nuts therein, a dispensing head at one end of said tube for individually dispensing nuts, a removable cap secured to and closing the other end of the tube, an aligning rod secured to said cap and extending centrally within the tube toward the dispensing head, a feed block slidably carried by said rod, spring means disposed between the cap and block to normally urge the latter toward the free end of the rod, latch means carried by said cap engageable with said feed block to hold the latter in close proximity to the cap leaving a major portion of the aligning rod exposed for stacking nuts thereon, means on said tube engaging and mov-

ing said latch means to an inoperative position whereby the feed block is released when the cap is fully engaged with the tube.

3. In a nut dispenser, an elongate tube adapted to receive a supply of stacked nuts therein, a dispensing head at one end of said tube for individually dispensing nuts, a removable cap secured to and closing the other end of the tube, an aligning rod secured to said cap and extending centrally within the tube toward the dispensing head, a feed block slidably carried by said rod, spring means disposed between the cap and block to normally urge the latter toward the free end of the rod, latch means carried by said cap engageable with said feed block to hold the latter in close proximity to the cap leaving a major portion of the aligning rod exposed for stacking nuts thereon, said tube having a beveled end edge camming said latch means to an inoperative position to release said feed block when the cap is fully engaged with the tube.

4. A nut dispenser having an elongate tube provided at its opposite ends respectively with a dispensing head and a removable cap, the tube being adapted to receive a supply of stacked nuts for dispensation one at a time from the dispensing head, an aligning rod secured to said cap and extending centrally within said tube, a feed block slidably carried by said rod, said feed block including a main sleeve portion having a plug secured in one end, the plug being apertured for snug slidable reception of said rod, a coil spring enclosing said rod and abutting at its opposite ends with said cap and said plug so as to normally urge the feed block toward said dispensing head, latch means carried by said cap for releasably securing the feed block thereto, said latch means including spring finger members engageable with a groove in said feed block sleeve portion, said spring fingers being cammingly engaged by one end of said tube to hold the same in releasing position when the cap is engaged on said tube.

5. In a nut dispenser, an elongate tube adapted to receive a supply of stacked nuts therein, a dispensing head at one end of said tube for dispensing nuts, a removable cap secured upon the other end of said tube, said cap including a cylindrical portion and a closed end portion with the cylindrical portion receiving part of said tube, an aligning rod secured to said closed end portion and projecting centrally within said tube, a feed block slidably carried by said rod, a spring disposed between the closed end of the cap and said feed block for normally urging the same toward said dispensing head, latch means disposed within said cap, said latch means including spring fingers disposed inwardly of the open end of said cap and normally engageable with said feed block to hold the same adjacent the cap in opposition to said spring and thereby expose a major portion of said rod such that a supply of nuts may be readily stacked thereon, that part of the tube which is received in the cap being engaged with said spring fingers to urge them apart out of engagement with the feed block.

6. The nut dispenser according to claim 5 wherein the extremities of said spring fingers are wedge shaped and wherein the end part of the tube is beveled.

7. The nut dispenser according to claim 1, wherein said dispensing head comprises a tapered helically wound spring with its larger end engaged upon said tube.

8. The nut dispenser according to claim 1 wherein said dispensing head comprises a tapered, helically wound spring strip with its larger end engaged upon said tube, the edges of said strip being overlapped such that adjacent coils are partially nested.

References Cited in the file of this patent

UNITED STATES PATENTS

868,436	Hermand	Oct. 15, 1907
1,986,246	Bernhardt	Jan. 1, 1935
2,277,815	Broeren et al.	Mar. 31, 1942
2,701,491	Ross	Feb. 8, 1955