Oct. 28, 1958 C. J. RED, JR 2,857,794

NUT STARTER WITH ELASTIC DISPENSING NOZZLE

Filed Nov. 30, 1954

FIG. 1.

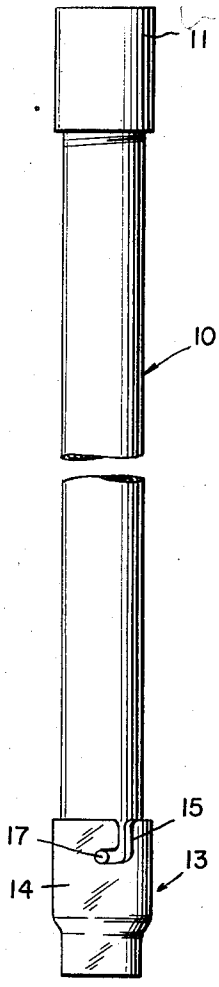


FIG. 2.

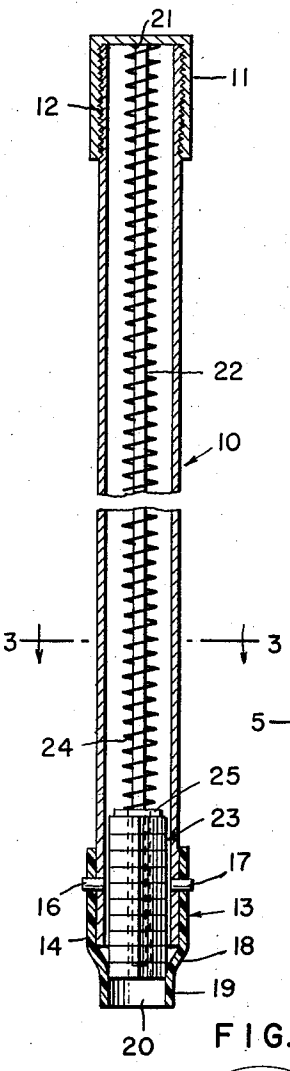


FIG. 4.

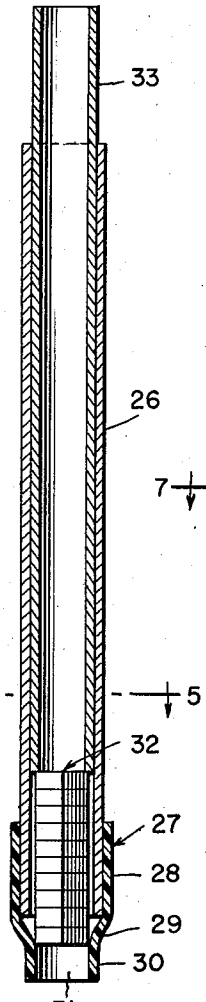


FIG. 6.

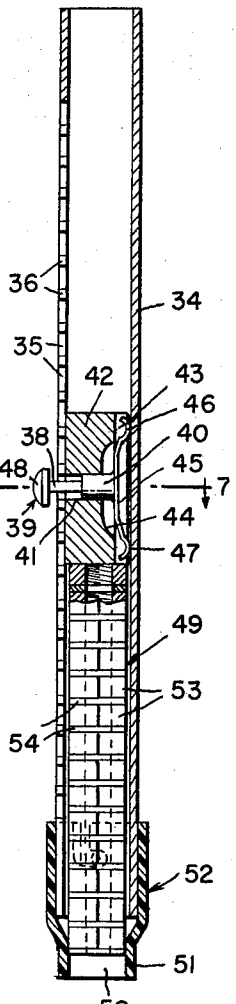


FIG. 3.

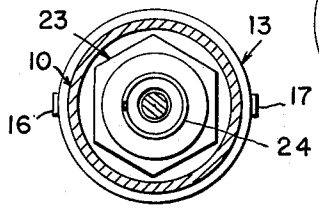


FIG. 5.

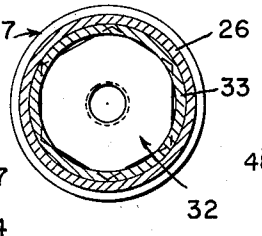
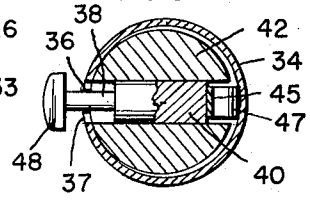


FIG. 7.



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NUT STARTER WITH ELASTIC DISPENSING NOZZLE

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2 Claims. (Cl. 81—64)

This invention relates to dispensing mechanism generally and more specifically relates to mechanism adapted to contain a quantity of nuts including means enabling the nuts to be individually dispensed and engaged on an associated bolt, stud or the like.

In repair, maintenance and assembly work on compact articles such as radio, television, electronic equipment in general and in many mechanisms and machines, it is frequently necessary to engage nuts of very small dimensions upon related parts of the mechanism under consideration. Not only are the nuts rather small, but quite usually the screw threaded members associated therewith are relatively inaccessible and may at best be reached with great difficulty with the fingers. Nuts of this type are usually sold in lots of relatively large quantity since it is well known that the waste due to loss may reach rather large proportions. Present methods of engaging such nuts or their associated bolts or other screw threaded members are thus characterized by a great loss of time and by a substantial waste due to loss.

It is, therefore, a primary object of this invention to provide a nut dispensing and starting device which will enable a repairman, assembly operator or the like to rapidly and easily engage nuts on associated studs or the like substantially without waste or loss and which is further characterized by its simplicity and its ready adaptability to economical manufacture.

A further object of this invention is to provide an improved nut dispenser and starter which incorporates a dispensing head member which will permit relative misalignment between the dispenser and an associated stud or the like while at the same time will enable a nut within the dispenser to be properly engaged upon the stud.

Another object of this invention resides in the provision of an improved dispensing head which operates effectively to both dispense a single nut at a time and provide means by which that nut may be started upon an associated screw threaded member.

Still another object of this invention is to provide both manual and automatic feed mechanism for delivering a supply of nuts to the dispensing head.

A further object of this invention lies in the provision of a dispensing head constructed of resilient material and which presents a passageway therethrough of smaller diameter or dimension than the nuts to be dispensed so as to hold the same both for individual dispensing and for turning or starting the individual nuts upon a screw threaded member.

A still further object of this invention is to provide an improved nut dispenser and starter which incorporates a tube adapted to receive a supply of nuts, means for feeding the nuts toward one end of the tube, and dispenser head means at the stated end of the tube for holding the nuts against release from the tube while at the same time enabling them to be started and dispensed one at a time.

These and other objects inherent in this invention hereinafter described will become apparent as the description proceeds.

Illustrative embodiments of the invention are shown in the accompanying drawing but it is to be understood that this showing is illustrative only and is not intended to be limiting to the exact construction shown since obviously changes can be made both in detailed construction and arrangement of parts without forming a departure from the spirit and scope of this invention as set forth and defined in the appended claims.

In the drawing:

Fig. 1 is an elevational view of a dispenser constructed in accordance with this invention, showing the same with a central portion broken away;

Fig. 2 is a longitudinal section taken through the assembly shown in Fig. 1;

Fig. 3 is an enlarged horizontal section taken along the section of line 3—3 in Fig. 2;

Fig. 4 is a longitudinal section taken through a modified form of dispenser;

Fig. 5 is an enlarged horizontal section taken along the plane of section line 5—5 in Fig. 4;

Fig. 6 is a longitudinal section taken through a still further modified form of the invention; and

Fig. 7 is an enlarged horizontal section taken along the plane of section line 7—7 of Fig. 6.

Referring most particularly at this time to Figs. 1, 2 and 3, the invention shown therein will be seen to consist of an elongate tube **10** which is closed at its upper end by a cap member **11** engaged upon a screw threaded portion **12** of the tube in the manner shown. The lower end of the tube is fitted with a dispenser head assembly indicated generally by the reference character **13**.

The dispenser head **13** includes a sleeve portion **14** fitted about the lower end of the tube **10** and in the instance shown in the drawing in Figs. 1 through 3 is provided with a bayonet slot **15** on diametrically opposed sides thereof which receive the bayonet studs **16** and **17** rigidly fastened to the lower end of the tube **10**. Beyond the lower end of the tube the dispenser head **13** tapers inwardly in the section **18** to terminate in a nozzle portion **19** of reduced diameter which presents a passageway **20** therethrough which is of substantially less diameter than the inside of the tube **10**.

The dispenser head, at least the nozzle portion **19** thereof is formed of elastic material such as plastic, rubber or the like for a purpose which will be presently apparent.

The cap **11** includes the cover portion **21** closing the upper end of the tube and fixedly secured to this cover portion and extending concentrically within the tube **10** is an aligning rod **22**. The aligning rod terminates at its lower end somewhat short of the nozzle portion **19** of the dispensing head **13** and a stack or supply of nuts **23** disposed within the tube **10** interengaged over the aligning rod **22**, thereby maintaining the nuts in properly stacked relation within the tube. A coil spring **24** is disposed about the aligning rod **22** and serves to urge the stack of nuts toward the lower end of the tube into engagement with the nozzle portion **19** of the dispensing head **13**. Preferably, a bearing washer **25** is interposed between the spring and the supply of nuts.

The tube **10** is of slightly greater diameter than the largest dimension of the individual nuts in the stack **23** whereas the passageway **20** is of somewhat less diameter in order that the spring **24** or merely the force of gravity does not permit the nuts to be released from the lower end of the tube. However, since the dispensing head nozzle **19** is formed of flexible material individual nuts may be pulled through the passageway **20** and thus dispensed. The manner in which the nuts are dispensed is to merely engage the nozzle **19** over the threaded end of a stud or other threaded member and by rotating the tube **10** the lowermost nut will engage upon the threaded member and subsequently the dispenser may be removed leav-

ing the nut engaged on the threaded member. In this respect, it is important to note that the binding effect had upon the lowermost nut by virtue of the resiliency of the nozzle 19 is sufficient to impart rotary motion to the lowermost nut as the tube is turned or rotated.

Referring now more particularly to Figs. 4 and 5 wherein a modified form of the invention is shown, the dispenser will be seen to include a tube 26 which is open at both ends and which is provided at its lower end with the dispenser head assembly 27. The dispensing head 27 includes the sleeve portion 28, the tapering portion 29 beyond the lower end of the tube and the terminal nozzle portion 30. The manner of attachment of the dispensing head 27 to the tube is preferably by means of frictional engagement therewith as for example by forming the entire dispensing head of a flexible material such that the sleeve portion 28 will bind upon and frictionally engage on the lower end of the tube 26. As in the case of the previously described dispensing head 13, the nozzle portion 30 of the dispensing head 27 presents a passageway 31 of reduced diameter with respect to the largest dimension of the supply of nuts 32 and with respect to the inside diameter of the tube 26. However, manual feed means is utilized to position the lowermost nut in the stack at least partially within the passageway 31 and this means will be seen to consist of an elongate feed rod 33 telescopically received in the tube 26 and projecting from the upper end thereof in the manner shown.

The manner of utilizing the modified form of assembly is substantially the same as the previously described assembly with the exception that the thumb or finger is utilized to depress the feed rod 33 and thus feed the lowermost nut in the stack 32 at least partially within the passageway 31 formed by the dispenser head nozzle 30.

With reference now to Figs. 6 and 7 a still further modified construction will be seen which consists of an elongate tube 34 provided along a substantial portion of its length and opening upon the lower end thereof with a slot or groove 35 having inwardly directed projections on opposite sides thereof such as the teeth 36 and 37.

The teeth along one side of the slot or groove are opposite or in opposed relation with those on the opposite side and there are formed by this arrangement a series of longitudinally spaced, relatively large openings.

The numeral 42 designates a feed block member positioned within the bore of the tube 34 for sliding movement. This block has a longitudinally extending groove 43 formed therein and an additional groove or depression communicating with the groove 43 and which is designated 44. The numeral 45 designates an elongate spring leaf adapted to lie in the groove 43 and at its ends this spring leaf terminates in the pressure feet 46 and 47 which bear against the inner surface of the tube 34 and the spring is biased so that the feet will press against the wall of the tube and force the intermediate portion of the spring into the depression 44.

The numeral 39 generally designates a plunger assembly which includes an inner end portion 40 secured to the spring 45 midway of the ends and which is slidably positioned in the transverse bore 41 in the feed block 42, which bore is directed toward the slot 35 of the tube. The portion 40 of the plunger assembly has joined to the outer end thereof the reduced neck portion 38 which projects through the slot 35 and carries on its outer end the head 48.

The openings formed in the edges of the slot 35 are of sufficient size to receive the inner end portion 40 of the plunger assembly when the assembly is projected outwardly by the spring 45 and in this manner the feed block 42 is held against movement axially in the tube. When the nuts are to be moved forwardly in the tube by the feed block 42, the block is released for such movement by pressing the plunger assembly 39 inwardly against the resistance of the spring 45 so as to remove the inner end portion 40 from the openings between the teeth 36 and bring the reduced neck portion 38 into the slot 35. This neck portion is sufficiently reduced in diameter to move longitudinally of the slot between the oppositely positioned opposed teeth and thus the block can be fed downwardly to the next position where, upon release of the plunger, the spring will again project the plunger outwardly to engage the inner end portion 40 between the next pair of openings. Thus the stack of nuts 49 will be fed downwardly toward the lower end of the tube 34 into at least partial engagement within the passageway 50 formed by the nozzle portion 51 of the dispenser head 52. The dispenser head 52 as shown is identical to the dispenser head 13.

Fig. 6 also shows the manner in which the dispensing and starting mechanism may be utilized in connection with both nuts and washers. The supply of nuts 49 includes alternate nuts 53 and washers 54 so that every time a nut is dispensed an associated washer will be properly associated therewith.

It will be appreciated that due to the elasticity and resiliency of the dispensing head, particularly the nozzle portion thereof, the dispensing tube need not necessarily be positioned in precise alignment with the screw threaded member to which a nut is desired to be applied but may be substantially misaligned therewith and still permit the dispensed nut to be properly engaged upon the screw threaded member. Furthermore, it is to be understood that the dispensing head nozzle may be located a substantial distance from the lower end of the dispensing tube and the tapered portion of the head may be also formed of resilient and elastic material so that the mechanism will be extremely useful in reaching inaccessible screw threaded members for engagement of nuts thereon.

I claim:

1. A nut starter and dispenser comprising an elongate magazine tube adapted to receive a stacked supply of nuts therein of a diameter approximating the inside diameter of the tube, a tubular dispenser head carried by one end of said tube, said dispenser head embodying an upper relatively long sleeve portion having an inside diameter to snugly receive one end of the magazine tube and a lower end nozzle portion, said nozzle portion joining the sleeve portion by a sort tapered intermediate portion, at least the nozzle portion of the head being elastic and of substantially constant inside diameter through its length and the inside diameter of the elastic nozzle portion being materially less than the inside diameter of the tube whereby to frictionally engage and normally restrain the lowermost nut of a supply stack in the tube from freely passing through the nozzle but the nozzle being stretchable to permit such lowermost nut to be forced therethrough, and means within the tube urging movement of the stack therethrough and for urging the lowermost nut of the supply stack toward and into the nozzle.

2. The invention according to claim 1, wherein said sleeve and tube end are detachably coupled by a bayonet slot in the sleeve and a pin carried by the tube end.

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