Oct. 17, 1950 C. L. RIMES 2,526,273

NUTCRACKER

Filed Dec. 26, 1946 2 Sheets-Sheet 1

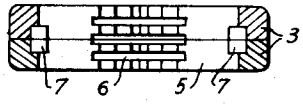


FIG. 2.

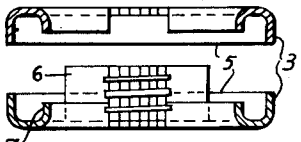


FIG. 7.

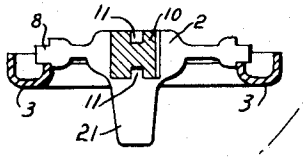


FIG. 10.

FIG. 1.

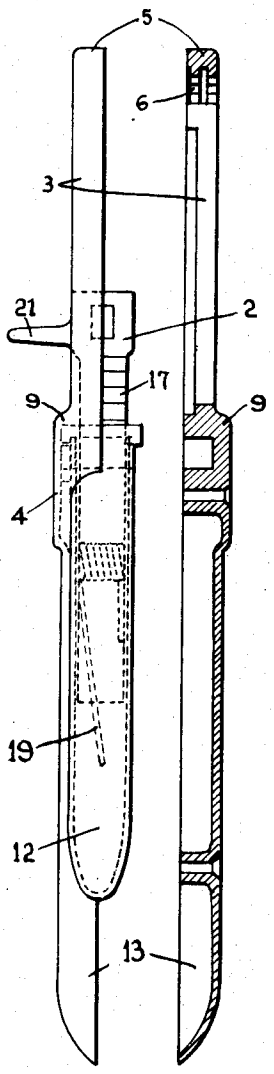


FIG. 3.

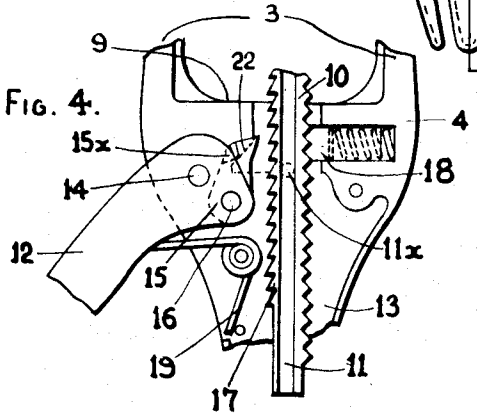


FIG. 4.

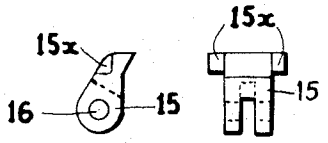


FIG. 5. FIG. 5a.

Cuthbert Leslie Rimes,
Inventor
By Cushman, Darby & Cushman,
attys

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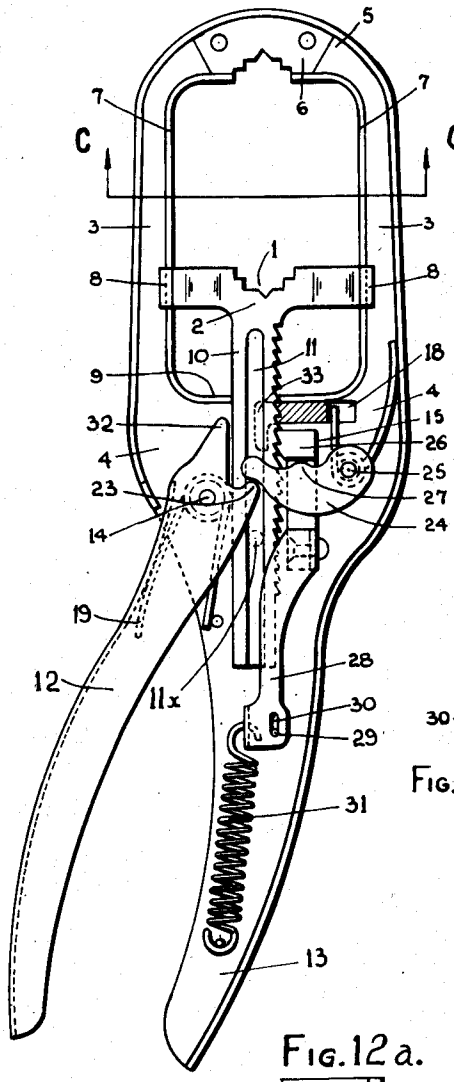


Fig. 6.

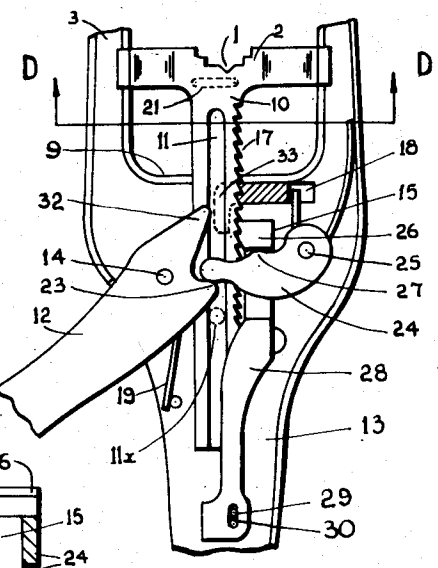


Fig. 8.

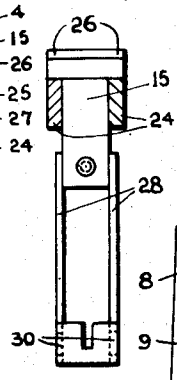


Fig. 11.

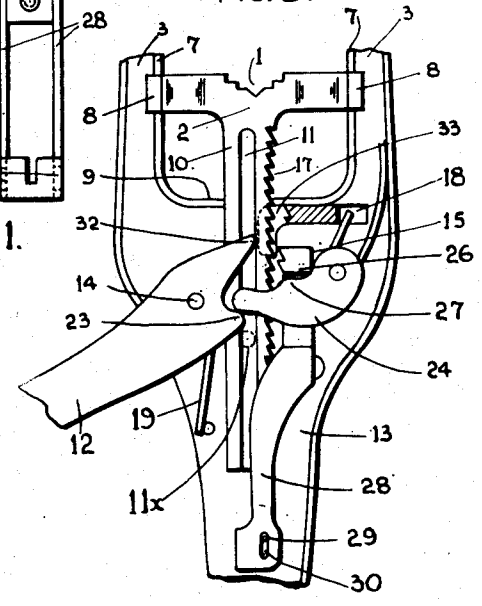


Fig. 9.

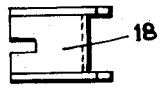


Fig. 12a.

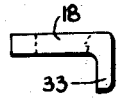


Fig. 12.

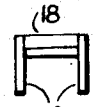


Fig. 12b.

Cuthbert Leslie Rimes, Inventor

By Cushman, Darby & Cushman, attys.

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NUTCRACKER

Cuthbert Leslie Rimes, Leeds, England

Application December 26, 1946, Serial No. 718,444
In Great Britain October 17, 1944

Section 1, Public Law 690, August 8, 1946
Patent expires October 17, 1964

2 Claims. (Cl. 146—16)

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The present invention relates to nut-crackers.

According to the present invention, the progressive relative longitudinal displacement of a pair of jaws of an implement or tool of the kind mentioned, to achieve closing of the jaws, is dependent upon and is effected through pawl and ratchet mechanism, by the relative displacement of a pair of handles connected to one of the jaws.

The relative displacement of the jaws for closure purposes, is caused by the movement of one of the jaws, which is progressive by predetermined amounts in relation to a frame member, constituting the other or fixed jaw, within which the first mentioned jaw is guided and moved by pawl mechanism, on relative angular displacement of the pair of handles, the said movable jaw being capable of liberation from the pawl mechanism to permit of relative displacement independently of the handles, as when it is desired to return the movable jaw to the open position.

In order that the invention may be clearly understood and readily carried into effect the same will now be more fully described with reference to and by the aid of the accompanying drawings;

Figure 1 is a part sectional elevation of a nut-cracker, showing in full line the movable handle closed, and its open position in chain lines, the movable jaw being in its part open position.

Figure 2 is a section on the line A—A of Figure 1 showing the fixed jaw and grooves for a movable jaw to slide in.

Figure 3 is a side view of Figure 1 with handle in open position and one half of the casing removed, the removed half of said casing being shown as a section on the line B—B of Figure 1.

Figure 4 is a detail fragmentary view showing the pawl disengaged from the rack as when the handle is fully open.

Figures 5 and 5*a* illustrate end and side elevations respectively of the pawl.

Figure 6 is a part sectional elevation with one half of the casing removed, of a nut-cracker showing an alternative lever mechanism for actuating the pawl.

Figure 7 is a section on the line C—C of Figure 6, but showing both casings.

Figure 8 is a detail view of Figure 6 illustrating the pivotal handle and pawl at the commencement of their operating strokes.

Figure 9 is a similar view to Figure 8 but with the pawl disengaged from the rack i. e. with handle fully open.

Figure 10 is a section on the line D—D of Figure 8.

Figure 11 is a side view of the pawl and secondary or subsidiary levers.

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Figures 12, 12*a*, and 12*b* comprise views of the retaining pawl being side, plan end views respectively.

Referring to Figures 1–5 of the drawings of the device for cracking nuts, a movable jaw 1 comprised by the head of a plunger 2 of substantially T form, is longitudinally displaceable within the arms 3 of a U-shaped frame member 4 the loop 5 of which comprises or houses the fixed jaw 6. The arms 3 of the U-shaped frame of channel shape in cross section to provide guides 7 within which the extremities 8 of the head plunger 2 of the movable jaw 1 are slidable, whilst the U-shaped frame is closed at the opposite end to the loop 5 by flanges 9 extending outside the stem 10 of the plunger 2, between which flanges the said stem 10 is slidable. The stem 10 of the plunger is of rectangular shape in cross section and is suitably guided to allow the movable jaw or plunger 2 to slide freely within the guides 7. This may be effected by providing longitudinal grooves with which mesh pins 11×.

The plunger 2 is adapted to be longitudinally displaced towards the fixed jaw 6, within the U-shaped frame 4, by the relative angular displacement of the handle 12 towards the handle 13, of which handle 12 pivoted at 14, acts on a resiliently loaded pawl 15 pivoted at 16 to engage ratchet teeth 17 on the stem 10 of the plunger 2. A resiliently loaded retaining pawl 18 prevents retraction of the plunger 2 when the handle 12 is allowed to return to its original position, under the action of a spring 19 or other suitable resilient load. As the handle 12, 13 takes up its original position, the main pawl 15, by virtue of its resilient load and the ratchet formation of the teeth 17 on the stem 10 of the plunger 2, retracts to engage a lower disposed tooth on the stem 10 of the plunger 2.

It will be seen therefore, that repeated movements of the handle 12, towards and away from the handle 13, produces a progressive displacement of the movable jaw 1, towards the fixed jaw.

Sufficient teeth 17 are provided on the stem 10 of the plunger 2 to allow the pawl 15, under the action of the handles, to bring the movable jaw up to the fixed jaw 6 only. Hence, after the jaws are brought together, the mechanism cannot be strained by further movement of the handles, as, in this position there are no teeth at 20 (see Figure 1) on the stem 10 of the plunger 2 with which the pawl 15 can engage.

To move the movable jaw away from the fixed jaw 6 a projection 21 is formed on the plunger 2 and when the handle 12 (see Figure 4) is

allowed maximum relative movement away from the handle 13 the pawl 15 is drawn away from the rack teeth 17 by the projections 15× engaging a cam or inclined face 22 formed on the body or casing frame member 4. The plunger 2 is then free to be moved away from the fixed jaw 6 during which movement the pawl 18 rides over the rack teeth 17a.

Referring to Figures 6 to 12 in which similar parts to those shown in Figures 1 to 5 have like references, the handle 12 pivoted at 14 is formed at its inner end with a cam projection 23 engaging secondary levers 24 pivoted at 25 which pass under a lug 26 on the pawl 15. The secondary levers 24 engage the pawl 15 at 27 and said pawl is carried by a vertically movable extension 28 guided by a pin 29 and a slot 30, within the handle 13. A spring 31 acts to return the pawl 15 after each upward stroke and to keep it normally in contact with the teeth 17 of the plunger 2. A spring loaded retaining catch 18 engages the teeth 17 of the plunger 2 to prevent its retraction whilst further cams 32 on the inner end of the handle 12 engage lugs 33 on the retaining pawl 18 when said handle 12 is moved towards its fully open position. Further movement of the handle 12 in this direction disengages the retaining pawl 18 which in turn engages the main pawl 15 through lugs 33 to force the pawl 15 also out of engagement with the ratchet teeth 17 (see Figure 9).

The movable jaw 1 is then free to be moved away from the fixed jaw 6 by means of the projection 21. During the disengagement of the main pawl 15 the latter pivots about the pin 29 aforementioned.

In the cracking of a nut, for example, this is inserted within the frame, between the fixed jaw and the retracted movable jaw, and, due to the ratchet formation of the teeth on the stem and the resilient loading of the pawl members, the said jaw is manually displaced towards the fixed jaw, irrespective of the position of the handles, to cause the nut to be lightly held between the jaws. On a grip being applied to the handles to angularly displace these inwardly, a movement is imparted to the movable jaw, which movement is determined by the angular displacements of the handles and the pawl members engaging the teeth on the stem of the movable jaw. This movement may be just sufficient to fracture the shell of the nut without injury to the kernel, and it will be appreciated that the movable jaw is progressively advanced by the opening and closing of the handles.

When the handles are opened to a position beyond that required for the main pawl to engage a lower disposed tooth on the stem of the plunger of the movable jaw, in the one case the pawls 15 and 18 are both disengaged from the teeth on the plunger by the cam 32, and lugs 33 in the manner described (as shown in Figure 9) to permit retraction of the movable jaw, and thus allow withdrawal of the cracked nut from the frame, whilst in the other case, due to the double ratchet formation of the retaining pawl 18, only the main pawl 15 is disengaged from the teeth 17 on the plunger 2 (see Figure 4).

One of the handles is resiliently loaded, preferably to an extent in excess of the loading of the pawls, the said resilient load being operable in that direction assisting release of the pawls from the movable jaw. If desired in certain constructions the retaining pawl may be omitted but this is not to be preferred.

I claim:

1. In a nut-cracker, in combination, a pair of casings secured together, each casing affording an enclosed loop and a fixed handle part, a fixed jaw between the casings at the forward ends of the enclosed loops, a movable jaw slidably mounted between the casings and capable of sliding between the enclosed loops toward and away from the fixed jaw, and means for sliding the movable jaw including a ratchet mechanism operated by a handle pivoted to the fixed handle parts of the pair of casings.

2. In a nut-cracker, in combination, a pair of casings secured together, each casing affording an enclosed loop and a fixed handle part, guides formed between the casings in opposite sides of the enclosed loops, a fixed jaw between the casings at the forward ends of the enclosed loops, a movable jaw slidably mounted between the casings, projections on said movable jaw engaging the guides formed between the casings, said movable jaw being slidable between the enclosed loops toward and away from the fixed jaw, means for sliding the movable jaw toward the fixed jaw including a ratchet mechanism, a handle for operating the ratchet mechanism, said handle being pivoted to the fixed handle parts of the pair of casings, and means for sliding the movable jaw away from the fixed jaw including a ratchet releasing mechanism and a projection on the movable jaw.

CUTHBERT LESLIE RIMES.

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