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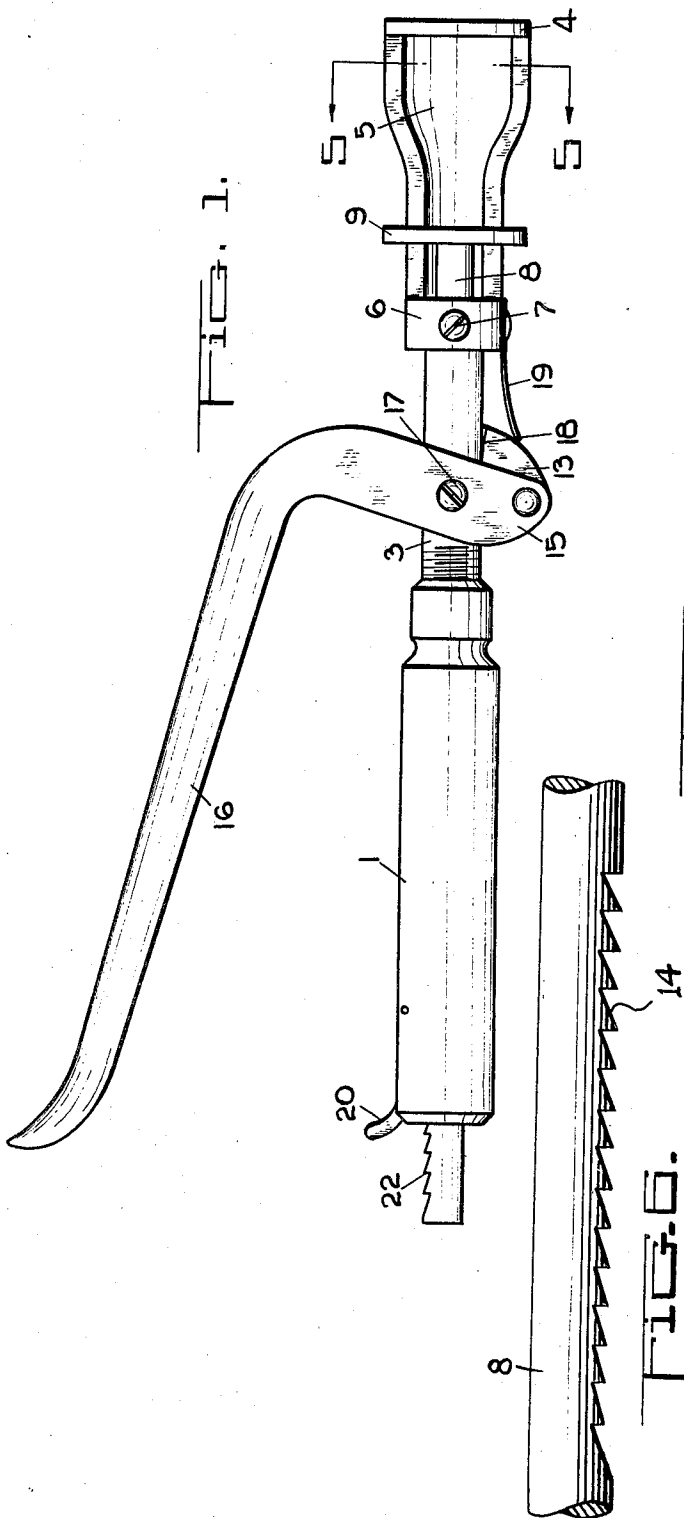
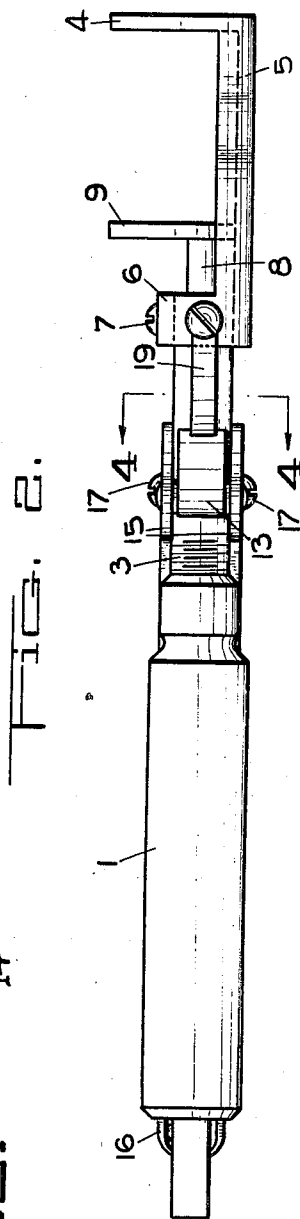
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NUTCRACKER

Filed Feb. 15, 1939

2 Sheets--Sheet 1



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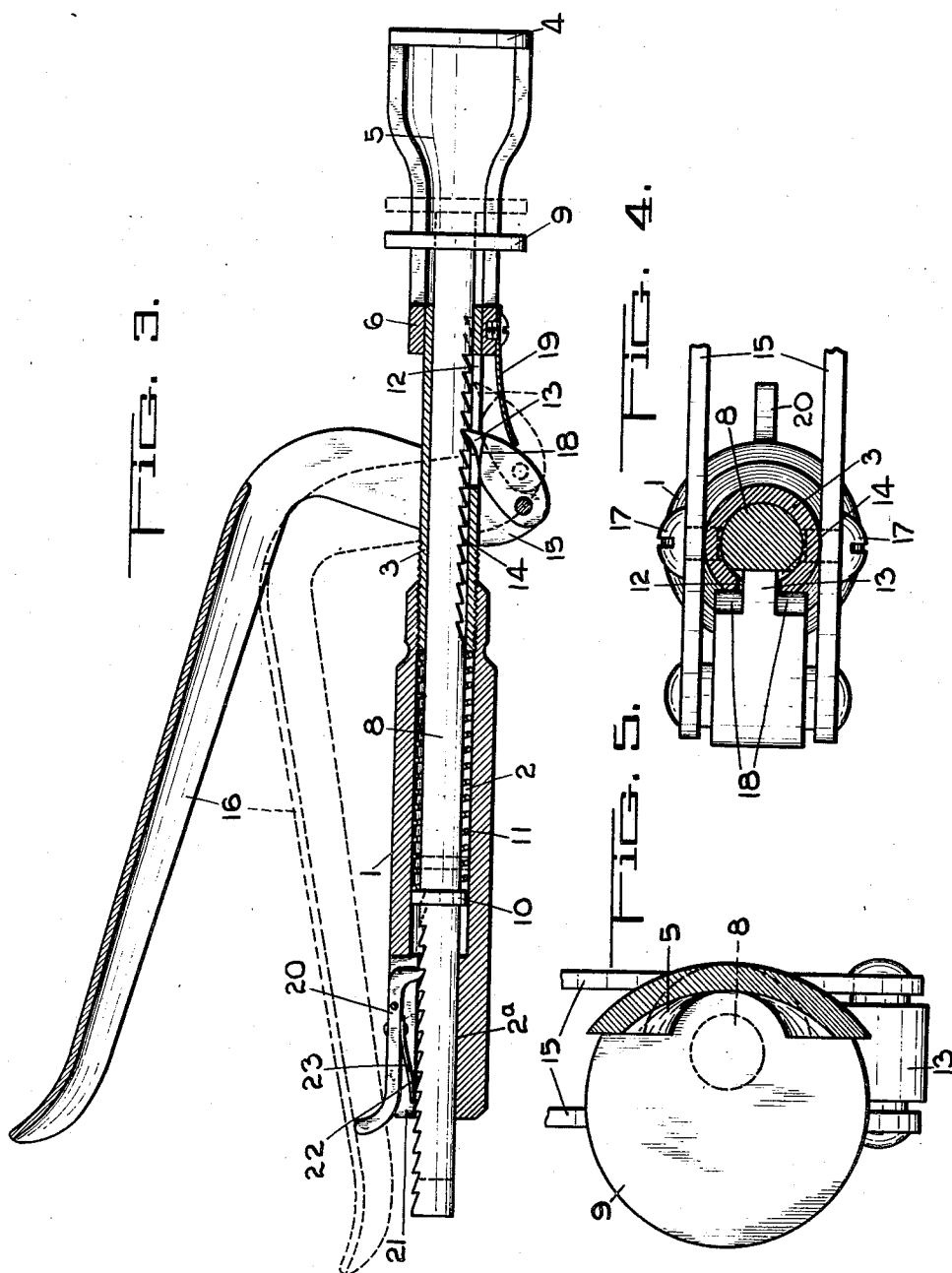
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NUTCRACKER

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13 Claims. (Cl. 146—16)

My invention relates to improvements in nutcrackers and an object of the invention is to devise a nutcracker in which the shells of nuts of various sizes can be cracked with the minimum of effort and without damaging the kernels of the nuts.

With the above and other objects in view which will hereinafter appear as the specification proceeds my invention consists, in its preferred embodiment, of the construction and arrangement all as hereinafter more particularly described and illustrated in the accompanying drawings in which—

Fig. 1 represents a top plan view of a nutcracker constructed according to my invention.

Fig. 2 is a side view taken at right angles to Fig. 1.

Fig. 3 is a longitudinal section.

Fig. 4 is an enlarged vertical section taken through the line 4—4 (Fig. 2).

Fig. 5 is an enlarged vertical section taken on the line 5—5 (Fig. 1), and

Fig. 6 is an enlarged fragmentary side view of a portion of the spindle to which the movable jaw of the device is attached showing the construction of the teeth on the rack of such spindle.

Like characters of reference indicate corresponding parts in the different views of the drawings.

In the form of my invention as illustrated in the drawings, my nutcracker comprises a handle member 1 of preferably substantially cylindrical form having a longitudinal bore 2 therethrough into one end of which is threaded a sleeve 3 disposed coaxially with the handle member 1 and connecting it to a fixed jaw 4.

The fixed jaw 4 has a cupped nut receiving portion 5 which may be reduced in size in the vicinity of a collar 6 which connects the fixed jaw to the sleeve 3, a set-screw 7 being provided to secure the collar 6 on the end of the sleeve 3.

The other end 2^a of the bore 2 of the handle member 1 is of reduced diameter and a spindle 8 extends therethrough and through the sleeve 3 into the portion 5 of the fixed jaw. An upwardly extending plate is secured to the end of the spindle 8 disposed in the portion 5 and constitutes a movable jaw 9 which cooperates with the fixed jaw 4 to crack the shells of the nuts inserted into the portion 5. A collar 10 is provided on the portion of the spindle 8 which is located in the bore 2 and a spiral spring 11 surrounds such portion of the spindle 8 with one end abutting the end of the sleeve 3 threaded into the bore and the other end abutting the collar 10. Such

spring 11 normally tends to hold the spindle 8 and the movable jaw 9 in the retracted position.

The portion of the sleeve 3 between the handle member 1 and the collar 6 has a longitudinal slot 12 therethrough to receive a pawl 13 adapted to engage the teeth of a longitudinally extending rack 14 on the spindle 8. The pawl 13 is pivotally mounted in the forked end 15 of an actuating lever 16 which is of substantially bell crank form and has its opposite end directed towards the butt end of the handle member 1 and adjacent to such handle member. The lever 16 is fulcrumed intermediately of its length to the sleeve 3 by screws 17 extending through the forked end 15 of such lever.

The teeth of the rack 14 are so directed that when the lever 16 is swung towards the handle member the pawl 13 will propel the spindle 8 and the attached movable jaw 9 towards the fixed jaw and such teeth increase in height from the end of the rack remote from the movable jaw 9 towards the end of the rack adjacent to such jaw and a longitudinal line passing through the apices of the teeth diverges from the axis of the spindle 8 from the first mentioned end of the rack towards the last mentioned end for a purpose which will hereinafter appear.

The pawl 13 is provided with a cam 18 which may comprise cam surfaces on each side of the tip of the pawl which are adapted to engage the exterior surface of the sleeve 3 when the actuating lever 16 and the pawl are reaching the limit of their stroke, thus lifting the pawl from engagement with a tooth of the rack. A leaf spring 19 attached at one end to the collar 6 has its free end pressing on the pawl 13 to afford means for resiliently holding it in engagement with a tooth of the rack 14 and, in disengaging the pawl from the rack, the cam 18 acts against the action of such leaf spring. Such leaf spring also tends to restore the lever 16 to its initial position after it has been actuated.

In order normally to prevent retrograde movement of the spindle 8 and the attached movable jaw 9, a pawl 20 is pivoted in a longitudinal slot 21 in the butt end of the handle member 1 and is adapted to engage the teeth of a rack 22 longitudinally disposed on the spindle 8. The pawl 20 is provided with a leaf spring 23 for normally holding it in engagement with a tooth of the rack unless disengaged therefrom by the free end of the lever 16 coming into contact with the outer end of the pawl 20.

I will now describe the manner in which the nutcracker constructed according to my invention

actuates. The instrument is held substantially horizontally with the movable jaw 9 retracted and the nut to be cracked is inserted into the portion 5 of the fixed jaw 4. By pressing forwardly on the movable jaw 9 it may be brought into contact with one end or side of the nut, the other end or side being in engagement with the fixed jaw 4 or, alternatively the lever 16 may be operated to bring the movable jaw into such position. In order to crack the shell of the nut the hand of the user extends round the handle member 1 and the lever 16 and pressure is exerted on the lever to bring its free end closer to the handle member. When this is done, the forked end 15 of the lever is swung in anti-clockwise direction causing the pawl 13 to move forwardly and as such pawl is in engagement with a tooth of the rack 14 the spindle 8 and the attached movable jaw 9 are moved forwardly crushing the nut shell between the latter and the fixed jaw 4. As the stroke of the lever is being completed the cam 8 engaging the exterior of the sleeve 3 withdraws the tip of the pawl 13 from engagement with a tooth of the rack 14 and subsequently the free end of the lever 16 engages the outer end of the pawl 20 and disengages it from a tooth of the rack 22 permitting the spindle 8 and the attached movable jaw 9 to be retracted under the influence of the spiral spring 11 in the bore 2 of the handle member 1. The cracked nut may then be picked out of the portion 5.

The purpose of the pawl 20 is to prevent retraction of the spindle 8 and attached movable jaw 9 during the periods the pawl 13 is disengaged from the rack as occurs where successive strokes of the lever 16 are necessary to crack the nut shell or initially to bring the movable jaw 9 into contact with the nut, it being understood that by employing slightly shorter strokes of the lever 16 it may be operated the required number of times without tripping the pawl 20 which only occurs when a full stroke of the lever is taken. The full stroke is taken when it is desired to retract the spindle 8 and attached movable jaw 9 at the completion of the nut cracking operation.

When a large nut is being cracked the spindle 8 and movable jaw 9 are necessarily in a more retracted position and thus the pawl 13 engages a higher tooth with the result that on the swing of the lever 16 the pawl 13 will remain engaged with the rack for a longer period before the cam 18 disengages such pawl from the rack tooth. Thus the movement of the spindle 8 will be greater than in the case of a small nut where the pawl 13 engages a tooth of lesser height. This construction enables nuts of different sizes to be effectively cracked without damaging their kernels.

From the above description it will be apparent that I have devised a simple and effective tool for cracking nuts which will be equally applicable for use on either large or small nuts and in which the movable jaw will be automatically retracted so as to remove the cracked nut readily at the completion of the cracking operation.

What I claim as my invention is:

1. In a nutcracker, in combination, a fixed jaw, a movable jaw, means for actuating the movable jaw forwardly towards the fixed jaw to crack a nut disposed therebetween, means for retracting the movable jaw upon the release of the movable jaw actuating means from the movable jaw, and means associated with the movable jaw actuating means for automatically effecting its release from the movable jaw at the completion of a maximum

forward movement of the latter and prior to the movable jaw actuating means being restored to its initial position.

2. In a nutcracker, in combination, a fixed jaw, a handle member associated with the fixed jaw, a spindle reciprocable in the handle member, a second jaw on one end of the spindle adapted to coact with the fixed jaw to crack a nut disposed therebetween, means for actuating the spindle forwardly to correspondingly move forwardly the second jaw towards the fixed jaw, spring means for retracting the spindle and second jaw upon release of the spindle actuating means from the spindle at the end of a maximum forward stroke of the latter, and means associated with the spindle actuating means for automatically effecting its release from the spindle at the end of its maximum forward stroke and prior to the spindle actuating means being restored to its initial position.

3. In a nutcracker, in combination, a fixed jaw, a handle member associated with the fixed jaw, a spindle reciprocable in the handle member, a second jaw on one end of the spindle adapted to coact with the fixed jaw to crack a nut disposed therebetween, a toothed rack on the spindle, a forwardly movable pawl engageable with the teeth of the rack for moving the spindle forwardly, a spring associated with the spindle for retracting the same, means on the handle member for actuating the pawl forwardly, and means on the pawl for disengaging it from the toothed rack at the end of a maximum forward movement of such pawl whereby the spindle and second jaw are retracted under influence of the spring irrespective of further actuation of the pawl actuating means.

4. In a nutcracker, in combination, a fixed jaw, a handle member associated with the fixed jaw, a spindle reciprocable in the handle member, a second jaw on one end of the spindle adapted to coact with the fixed jaw to crack a nut disposed therebetween, a toothed rack on the spindle, a forwardly movable pawl engageable with the teeth of the rack for moving the spindle forwardly, a spring associated with the spindle for retracting the same, a lever swingably mounted on the handle member and pivotally connected at one end to the pawl, and a cam on the pawl engageable with the handle member for disengaging the pawl from the toothed rack at the end of a maximum forward movement of such pawl whereby the spindle and second jaw are retracted under the influence of the spring irrespective of further actuation of the lever.

5. In a nutcracker, in combination, a fixed jaw, a movable jaw, means for actuating the movable jaw towards the fixed jaw to crack a nut disposed therebetween, means for retracting the movable jaw, means for preventing the retraction of the movable jaw during its forward movement by the movable jaw actuating means, and means incorporated in the movable jaw actuating means for releasing it from the movable jaw and substantially simultaneously tripping the movable jaw retraction preventing means at the completion of a maximum forward movement of the movable jaw.

6. In a nutcracker, in combination, a fixed jaw, a handle member associated with the fixed jaw, a spindle reciprocable in the handle member, a second jaw on one end of the spindle adapted to coact with the fixed jaw to crack a nut disposed therebetween, means for actuating the spindle forwardly to correspondingly move forwardly the

second jaw towards the fixed jaw, spring means for retracting the spindle and second jaw, means for preventing retraction of the spindle during successive operations of the spindle actuating means, and means associated with the spindle actuated means for releasing it from the spindle and substantially simultaneously tripping the spindle retraction preventing means at the completion of a maximum forward stroke of the spindle.

7. In a nutcracker, in combination, a fixed jaw, a handle member associated with the fixed jaw, a spindle reciprocable in the handle member, a second jaw on one end of the spindle adapted to coact with the fixed jaw to crack a nut disposed therebetween, a toothed rack on the spindle, a forwardly movable pawl engageable with the teeth of the rack for moving the spindle forwardly, a spring associated with the spindle for retracting the same, a second toothed rack on the spindle, a second pawl on the handle member engaging the teeth of the second rack, means on the handle member for actuating the first mentioned pawl forwardly, and means on the first mentioned pawl for disengaging it from the toothed rack at the end of a maximum forward movement of such pawl, said first mentioned pawl actuating means tripping the second pawl substantially simultaneously with the disengagement of the first mentioned pawl from its toothed rack whereby the spindle and second jaw are retracted under the influence of the spring irrespective of further actuation of the first mentioned pawl actuating means.

8. In a nutcracker, in combination, a fixed jaw, a handle member associated with the fixed jaw, a spindle reciprocable in the handle member, a second jaw on one end of the spindle adapted to coact with the fixed jaw to crack a nut disposed therebetween, a toothed rack on the spindle, a forwardly movable pawl engageable with the teeth of the rack for moving the spindle forwardly, a spring associated with the spindle for retracting the same, a second toothed rack on the spindle, a second pawl on the handle member engaging the teeth of the second rack, a lever swingably mounted on the handle member and pivotally connected at one end to the first mentioned pawl, and a cam on the first mentioned pawl engageable with the handle member for disengaging such pawl from its toothed rack at the end of a maximum forward movement of such pawl, said lever tripping the second pawl substantially simultaneously with the disengagement of the first mentioned pawl from the toothed rack whereby the spindle and second jaw are retracted under the influence of the spring irrespective of further actuation of the lever.

9. In a nutcracker, in combination, a fixed jaw, a handle member associated therewith, a spindle reciprocable in the handle member, a second jaw on one end of the spindle adapted to coact with the fixed jaw to crack a nut disposed therebetween, a toothed rack on the spindle having teeth gradually increasing in height from the end of the rack remote from the second jaw to the end adjacent such jaw with their apices on a line diverging from the axis of the spindle, a lever swingably mounted on the handle member, a pawl pivoted on one end of the lever and adapted to engage the teeth of the rack for moving the spindle and second jaw forward towards the fixed jaw upon actuation of the lever, and a cam on the pawl engageable with the handle member for disengaging the pawl from the teeth of the rack upon the pawl in its forward movement being turned through a degree of angularity with respect to the lever sufficient to disengage it from the tooth of the rack it has engaged.

10. In a nutcracker, a handle member including a longitudinally bored hand-grip portion and an axial sleeve extending from the hand-grip portion, a stationary jaw on the free end of the axial sleeve, a spindle reciprocable in said sleeve and adapted to protrude from its end adjacent the stationary jaw, a spring for retracting the spindle, a second jaw on the protruding end of the spindle adapted to coact with the stationary jaw to crack a nut disposed therebetween, a toothed rack on the spindle, a lever swingably mounted on the sleeve, a spring-held pawl pivotally mounted on one end of the lever and adapted to extend through a longitudinal slot in the sleeve into engagement with the teeth of the rack, and a cam on the pawl adapted to engage the sleeve.

11. A nutcracker as claimed in claim 10 wherein the stationary jaw includes a cupped nut receiving portion joining it to the sleeve.

12. A nutcracker as claimed in claim 10 wherein a second toothed rack is provided on the spindle, and a second spring-held pawl engages the teeth of such second toothed rack.

13. A nutcracker as claimed in claim 10 wherein a portion of the bore of the hand-grip is of reduced diameter to constitute a shoulder in such bore, a stop on the spindle adapted to contact the shoulder, and the spring for retracting the spindle comprises a spiral spring surrounding the spindle with one end in engagement with the sleeve and the other end in engagement with the stop.

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