June 16, 1942. A. H. PEARSON 2,286,303

CAN OPENER

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Fig. 1

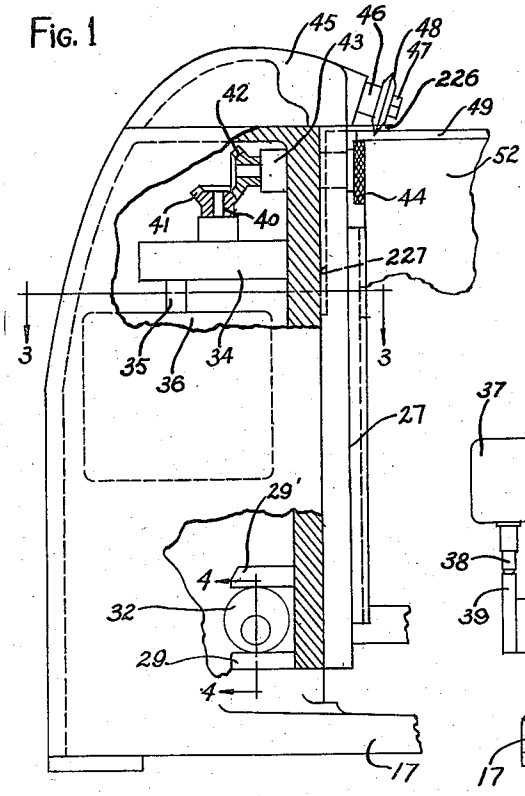


Fig. 2

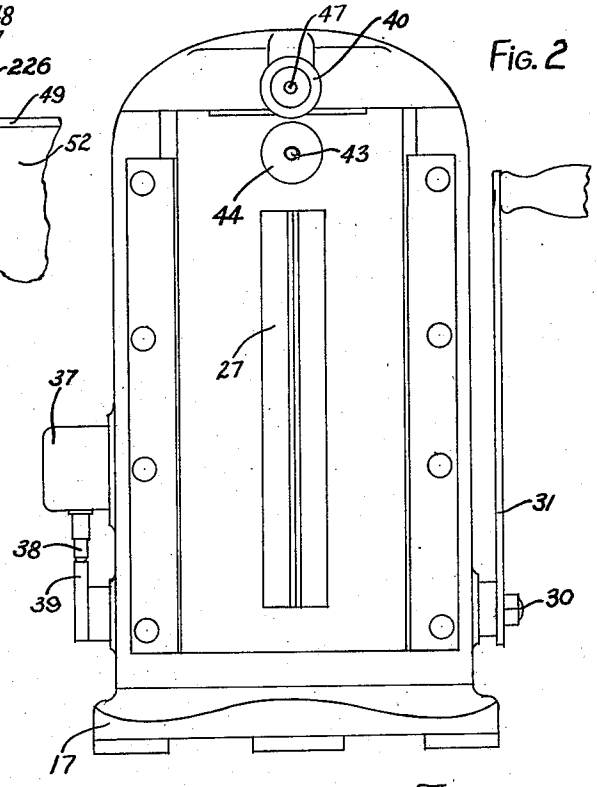


Fig. 3

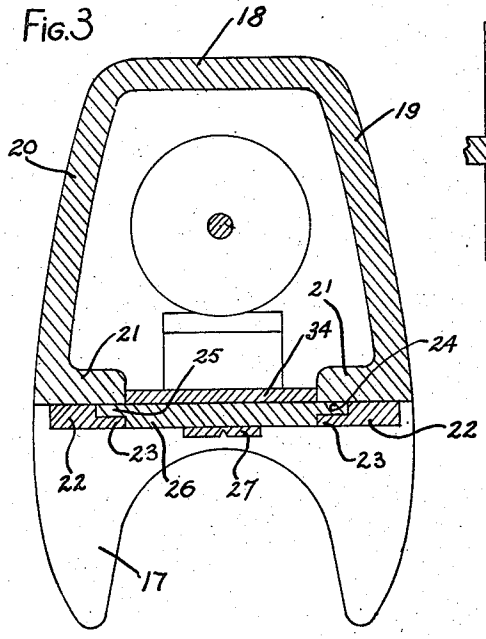


Fig. 4

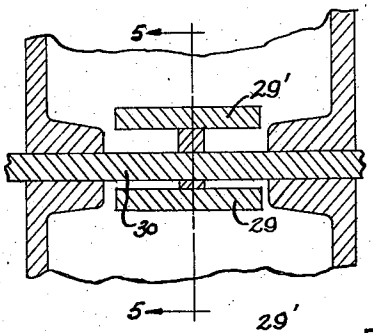
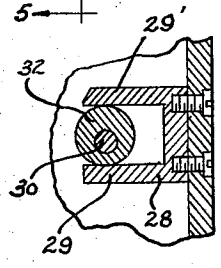


Fig. 5



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Fig. 6

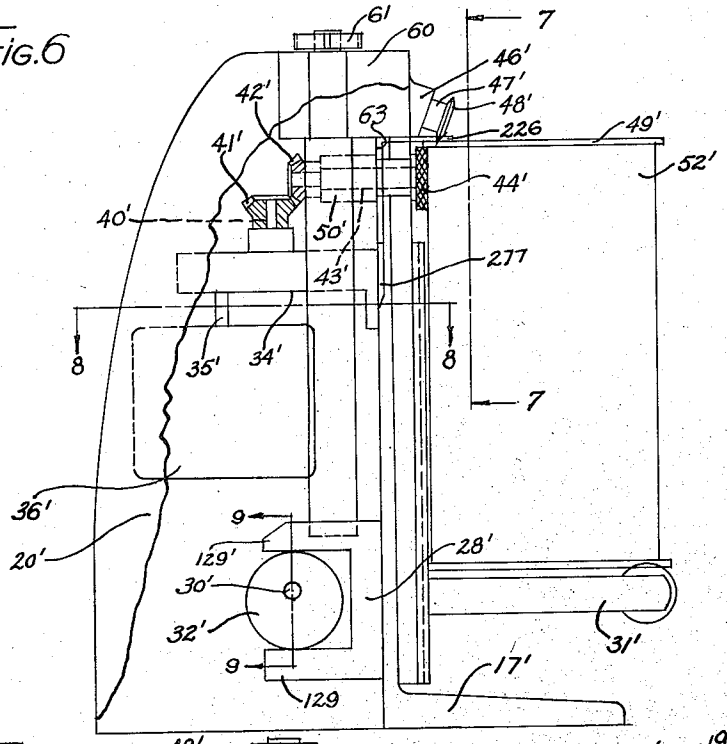


Fig. 7

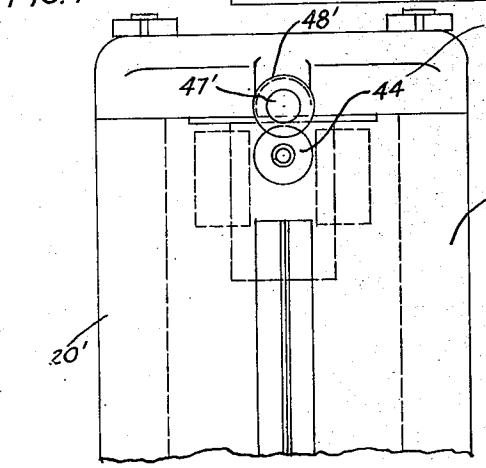


Fig. 8

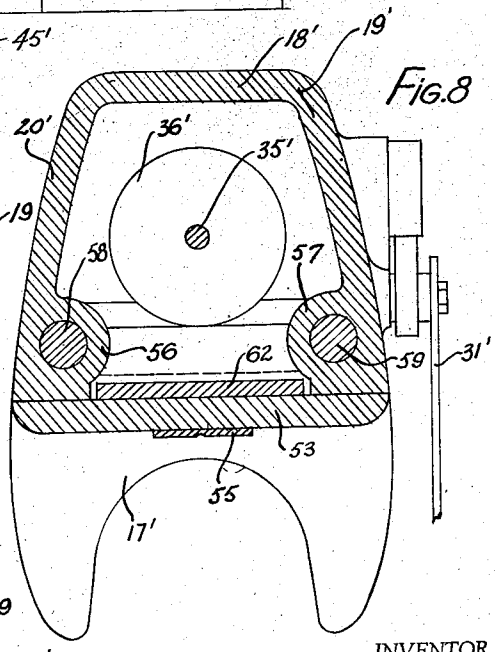
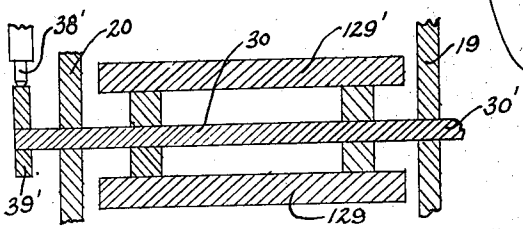


Fig. 9



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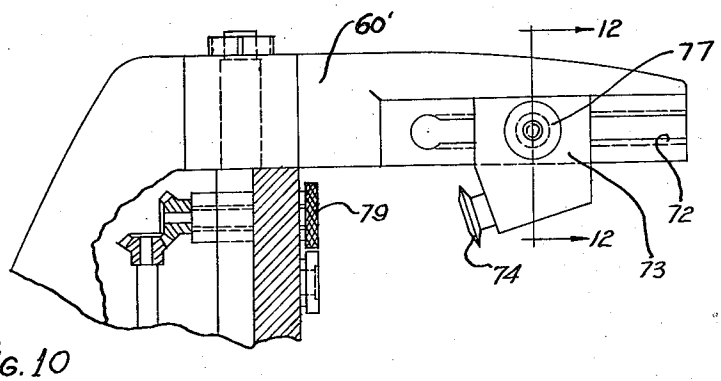


FIG. 10

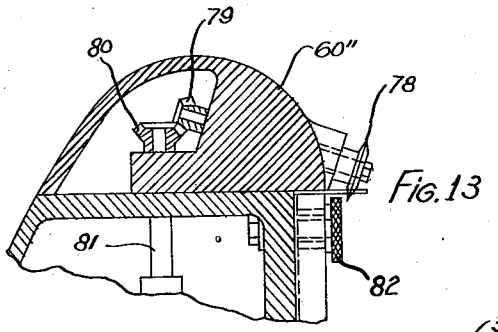


FIG. 13

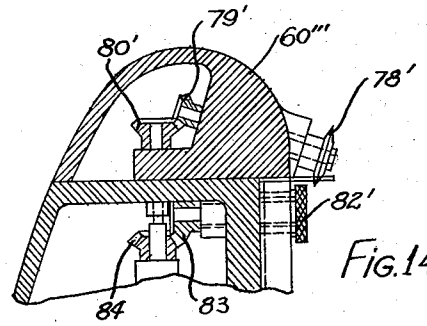


FIG. 14

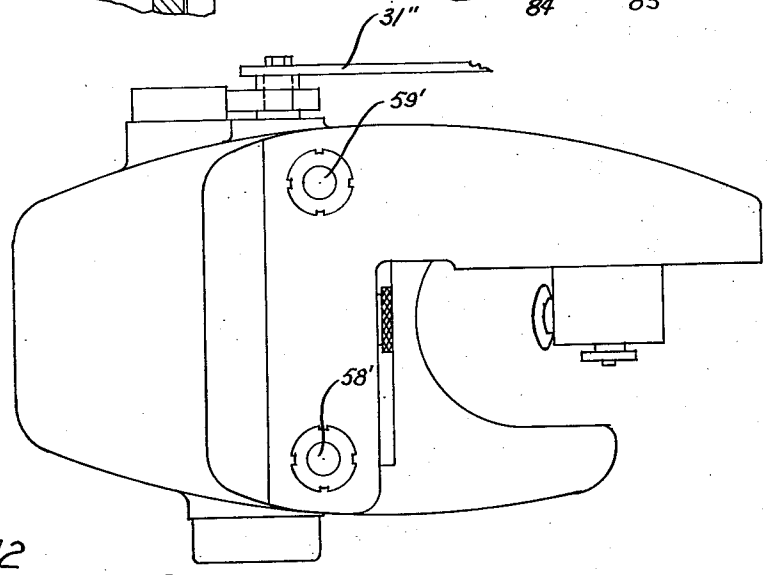
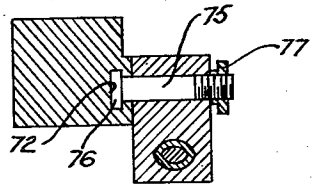


FIG. 11

FIG. 12



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Patented June 16, 1942 2,286,303

UNITED STATES PATENT OFFICE

2,286,303

CAN OPENER

Alan H. Pearson, Detroit, Mich.

Application June 26, 1940, Serial No. 342,509

5 Claims. (Cl. 30—4)

My invention relates to a new and useful improvement in a can opener of the power driven type so arranged and constructed that a can may be easily and quickly opened by power.

It is an object of the present invention to provide a construction so arranged that a cutting element may be caused to move relatively to and around a can sufficiently for cutting the top therefrom.

It is another object of the invention to provide a mechanism in which the can and the cutting element may be caused to move relatively to each other prior to the cutting operation so as to effect a piercing of the can by the cutting element prior to the beginning of the cutting operation.

Another object of the invention is the provision of a mechanism of this type so arranged and constructed that upon the piercing of the can by the cutting element, the power driven mechanism for effecting a relative rotation of the cutting element of the can will automatically be turned on and set into operation.

Another object of the invention is a provision of a device of this type which is simple in structure, economical in manufacture, durable, compact, light, possessed of a minimum number of parts and easily and quickly operated.

Another object of the invention is the provision of power driven means for rotating the can after the piercing operation.

Another object of the invention is the provision of a mechanism for rotating the can and rotating the cutting element after the piercing operation.

Another object of the invention is the provision in a device of this class of a cam operated raising and lowering mechanism.

Another object of the invention is the provision in a can opener of this class of a levelling device for maintaining the can at the proper level for cutting.

Other objects will appear hereinafter.

It is recognized that variations, modifications and changes may be made in the detail of structure illustrated without departing from the spirit of the invention and it is intended that such variations and modifications shall be embraced in the scope of the claims appended.

Forming a part of the specification are drawings, in which:

Fig. 1 is a side elevational view of the invention showing a can applied with a part of the housing broken away and parts shown in section.

Fig. 2 is a front elevational view of the invention with a part broken away.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional view taken on line 4—4 of Fig. 1, slightly reduced.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4, slightly reduced.

Fig. 6 is a side elevational view of another form of the invention with a part of the housing broken away.

Fig. 7 is a fragmentary front elevational view of the invention taken on substantially line 7—7 of Fig. 6.

Fig. 8 is a sectional view taken on line 8—8 of Fig. 6.

Fig. 9 is a sectional view taken on line 9—9 of Fig. 6.

Fig. 10 is a side elevational view of a modified form of head with parts broken away and parts shown in section.

Fig. 11 is a top plan view of the head shown in Fig. 10.

Fig. 12 is a sectional view taken on line 12—12 of Fig. 10.

Fig. 13 is a fragmentary vertical, longitudinal view showing a modified form of the invention.

Fig. 14 is a fragmentary vertical, sectional view showing another form of the head.

In the invention as shown in Fig. 1 I provide a base 17 projecting upwardly from which is a housing having a rear wall 18 and side walls 19 and 20. The side walls are provided with an inwardly turned flange 21 at the forward ends thereof, these flanges being spaced apart and extended vertically. Secured by bolts or in any other suitable manner on these flanges are the plates 22, each having a tongue 23 extending inwardly from the inner edge thereof in spaced relation to the flange 21 to provide a channel 24 in which engages a tongue 25 projecting outwardly from the opposite edges of the plate 26 so that the plate 26 is slidably mounted on the housing. Mounted on the front face of this plate is a wear plate 27.

Bolted or otherwise secured to the lower end of the plate 26 is a saddle 28 having the lower wall 29 and the upper wall 29'. Extended through the side walls of the housing and journalled therein is a shaft 30 on which is fixedly mounted, exterior of the housing, a crank 31 for rocking the shaft 30. Fixedly mounted on this shaft between the plates 29 and 29' and engaging the inner faces of these plates is a cam disc 32 which is a circular disc eccentrically mounted on the

shaft 30 so that as the crank 31 is raised and lowered, the plate 26 will be lowered and raised.

Mounted on the plate 26 is a gear housing 34 into which extends the shaft 35 of an electric motor 36. Mounted on the housing is a switch box 37 having a switch therein for controlling the motor 36. A plunger 38 which is normally spring pressed outwardly to retain the switch in open position is provided and adapted to engage the periphery of a cam 39 which is fixedly mounted on the shaft 30.

Projecting from the gear box 34 is a shaft 40 on which is mounted a bevel gear 41 meshing with the bevel gear 42 fixedly mounted on the shaft 43 on which is also fixedly mounted a roller 44 having a knurled periphery. Mounted on the head 45 is a bearing 46 in which is supported a shaft 47 on which is mounted a cutting disc 48. It will be noted that the axis of this cutting disc is extended angularly to the axis of the roller 44.

In operation a can 52 having a bead 49 is placed with the periphery of the can engaging the wear plate 27 and the bead 49 overlying and engaging the periphery of the roller 44. The crank 31 is then rocked downwardly which will serve to elevate the motor 36, the bracket 34 and the shaft 43 with the associated parts. This will move the can 52 upwardly into engagement with the cutting disc and force the cutting disc 48 to pierce the can. As this piercing is effected, the cam 39 will move the switch plunger 38 inwardly to close the circuit to the motor 36 to effect a rotation of the roller 44. This will cause the can 52 to rotate, thus cutting the top therefrom. When the cutting operation is completed, the crank 31 may be rocked upwardly to lower the mechanism so that the can may be removed from the position in which it was operated upon. When the mechanism is moved upwardly and the can is pierced and the cutting operation is being performed, the eccentric or cam 32 will have passed center so that the mechanism is locked in its elevated position.

A can levelling bracket 226 provided with the downwardly projecting portion 227 is mounted between the head 45 and provided with a cutaway portion for accommodating the plate or disc 48. The purpose of the outwardly extending portion 226 is to provide a surface against which the can may be pressed so that it will be at the proper angle.

With a mechanism operating in this manner an easy and quick cutting of the can is effected with a minimum loss of time and with a minimum amount of danger, cutting a perfect opening in the can.

In the form shown in Fig. 6 I have provided a base 17' projecting upwardly from which is a housing embodying a rear wall 18' and side walls 19' and 20', these side walls being connected together by a front wall 53 on which is mounted a plate 54 carrying a centrally disposed ware plate 55.

Formed on the interior surface of side walls 19' and 20' are bosses 56 and 57 in which slidably engage the rods 58 and 59 which project through and are secured to the slidable head 60, suitable nuts 61 being secured on the ends of the rods 58 and 59 so that the head is in fixed relation to the rods. The plate 62 is extended upwardly and secured to the head 60. Formed in this plate 62 is a slot 63 through which is projected the shaft 43' on which is fixedly mounted the roller 44' having a knurled periphery. This shaft 43' is journalled in the bearing 50' which is mounted on the front wall 53 at the slot 63. A bevel gear 42' which is fixedly mounted on the shaft 43' and meshes with the bevel gear 41' mounted on the shaft 40' projecting outwardly from the gear box 34'. A shaft 35' from the electric motor 36' projects into the gear box 34' and serves to rotate the gears therein. The rods 58 and 59 are connected to the saddle having the upper and lower legs 129' and 129 relatively connected to a wall 28', this saddle being slidably mounted so that as it moves upwardly or downwardly the rods 58 and 59 will also move upwardly or downwardly to move the head 60 upwardly or downwardly. Projected through the side walls 19' and 20' of the housing is a shaft 30' carrying the eccentric discs 32' fixedly mounted thereon and adapted to engage the legs 129 and 129' of the saddle. Fixedly mounted on the shaft 30' external of the housing is a crank 31' whereby the shaft may be rotated to raise or lower the haed 60. This head 60 carries a bearing 46' in which is journalled a shaft 47' on which the rotatable cutting disc 48' is mounted. It will be noted that the axis of the disc 48' is extended angularly to the knurled roller 44'.

In operation, the can 52' would be placed with its bead 49' overlying and engaging roller 44'. The crank 31' would then be rocked to bring the cutter 48' downwardly and effect a piercing of the can 52'. As this piercing is effected the cam 39' would force the switch control plunger inwardly to close the circuit to the motor 30' so that the roller 44' would be rotated, thus effecting the rotation of the can 52'. This construction is quite similar to the construction illustrated in Fig. 1, excepting that, in Fig. 1 the cutter is stationary and the roller is moved toward the cutter, and in Fig. 6 the rotating roller 44' is mounted in fixed bearings and the cutter is moved toward the roller. The same efficiency and ease of operation claimed for the structure in Fig. 1 is also present in the structure shown in Fig. 6.

In Fig. 10 I have shown a slightly modified form of structure in which a head 60' is extended outwardly to provide a track having a slot 72 formed therein so that the head 73 carrying the rotatable cutter 74 may be slid longitudinally of the groove or track 72. This head 73 carries a stud 75 having a head 76 engaging in the groove 72. By loosening the nut 77 on the stud 75, the head 73 may be slid inwardly or outwardly of the head 60' thus making it possible to adjust the device to various size cans or positions of opening. In this structure the roller 79 is driven in the manner already illustrated for rotating the can and the head 73 is movable toward or away from the roller 79.

In Fig. 13 I have shown a slightly modified form of construction in which a movable head 60'' is provided with a cutter 78 which is driven by the gearing 79 and 80 on the shaft 81 proceeding from a gear box on a motor. In this structure I have arranged a mechanism whereby the cutting element is rotated and the knurled roller 82 is rotatable but on a fixed bearing so that a rotation of the can must be effected manually.

In Fig. 14 I have shown a structure in which a movable head 60''' is provided and the cutter 78' is rotated by the gear 79' and 80' while the roller 82' is also rotated by the gear 83 and 84. As shown in Fig. 11 each of these types is provided with a crank 31'' which serves to raise

and lower the mechanism on the rods 58' and 59' which project in the manner explained for the structure illustrated in Fig. 6.

What I claim as new is:

1. A can opener of the class described, comprising: a base standard projecting upwardly from said base; a supporting mechanism slidably mounted on said standard; a can rotating means carried by said supporting mechanism; a cutting member carried by said standard; cam means for raising and lowering said supporting mechanism and moving a can into engagement with said cutting means; means for operating said can rotating means; and control means for controlling said operating means and effecting operation of the same upon the raising of a can into engagement with said cutting mechanism.

2. A can opener of the class described, comprising a base; a standard projecting upwardly from said base; a supporting mechanism slidably mounted on said standard and movable vertically thereon; a can rotating member; means for rotating said can rotating member; a cam mechanism for raising and lowering said supporting mechanism; and a control member for controlling said rotating means and effecting an operation of the same upon the raising of said supporting mechanism a predetermined distance.

3. A can opener of the class described, comprising a base, a standard projecting upwardly from said base; a supporting mechanism slidably mounted on said standard and movably upwardly and downwardly thereon; a can rotating mechanism carried by said supporting mechanism; means for rotating said can rotating mechanism, also carried by said supporting mechanism; a rotatable cam for raising and lowering said supporting mechanism; a crank for rotating said cam; and means for operating said rotating means upon the raising of said supporting mechanism to a predetermined distance.

4. A can opener of the class described comprising base; a supporting standard projecting upwardly from base; a supporting mechanism slidably mounted on said standard and movable upwardly and downwardly thereon; a can rotating mechanism carried by said supporting mechanism; means for rotating said can rotating mechanism, said rotating means being mounted on said supporting mechanism and movable therewith; a cam for raising and lowering said supporting mechanism; a crank for operating said cam; a means for operating said rotating mechanism upon the raising of said supporting mechanism a predetermined distance; and an element carried by said standard and engageable with said can upon the raising of the same a predetermined distance.

5. A can opener of the class described comprising base; a supporting standard projecting upwardly from base; a supporting mechanism slidably mounted on said standard and movable upwardly and downwardly thereon; a can rotating mechanism carried by said supporting mechanism, means for rotating said can rotating mechanism, said rotating means being mounted on said supporting mechanism and movable therewith; a cam for raising and lowering said supporting mechanism; a crank for operating said cam; a means for operating said rotating mechanism upon the raising of said supporting mechanism a predetermined distance; and an element carried by said standard and engageable with said can upon the raising of the same a predetermined distance, and means for adjusting said cutting mechanism radially of said can.

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