July 1, 1930. S. A. HAINES 1,768,980

CAN OPENER

Filed May 23, 1924 2 Sheets-Sheet 1

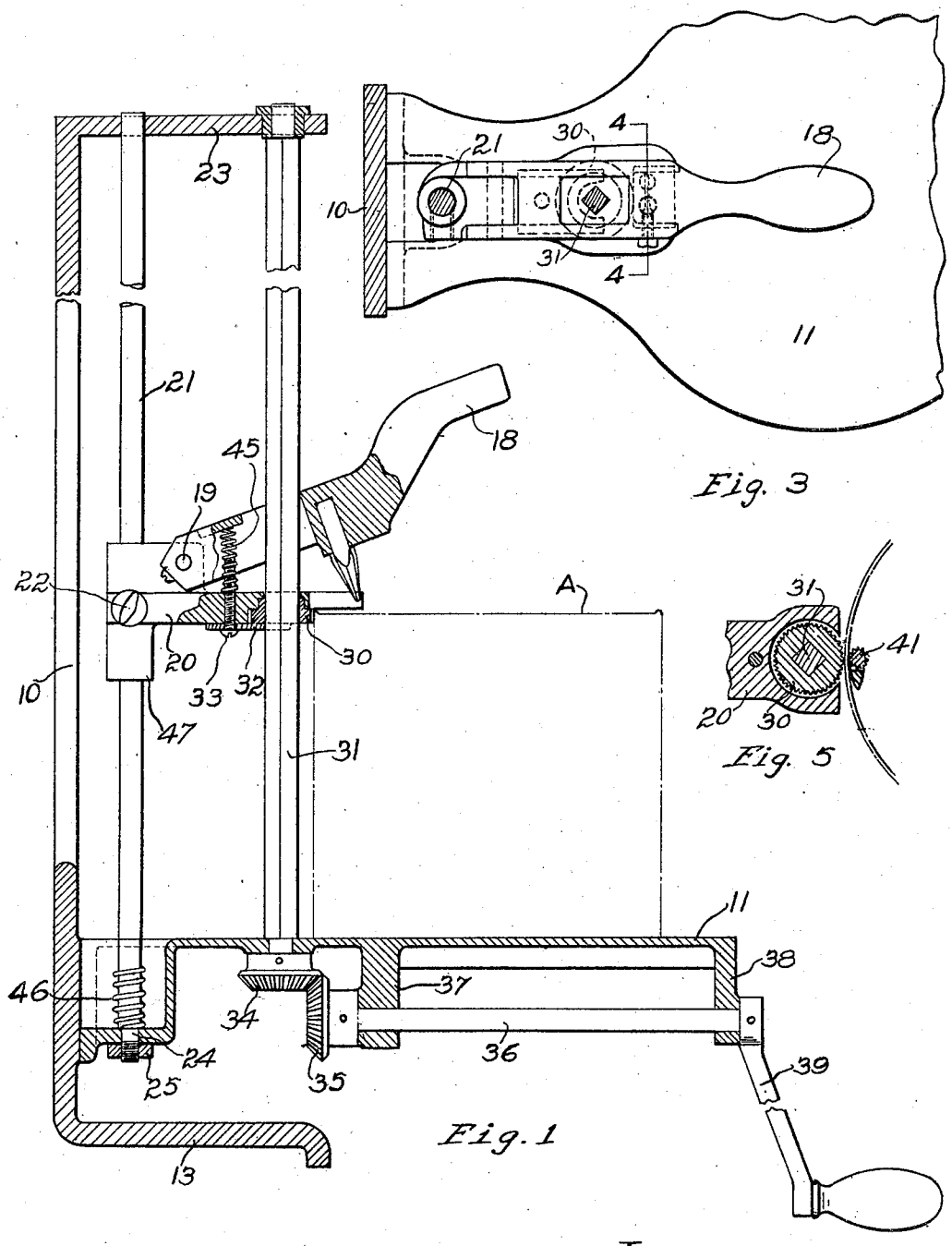



Fig. 1




Fig. 5

Fig. 3

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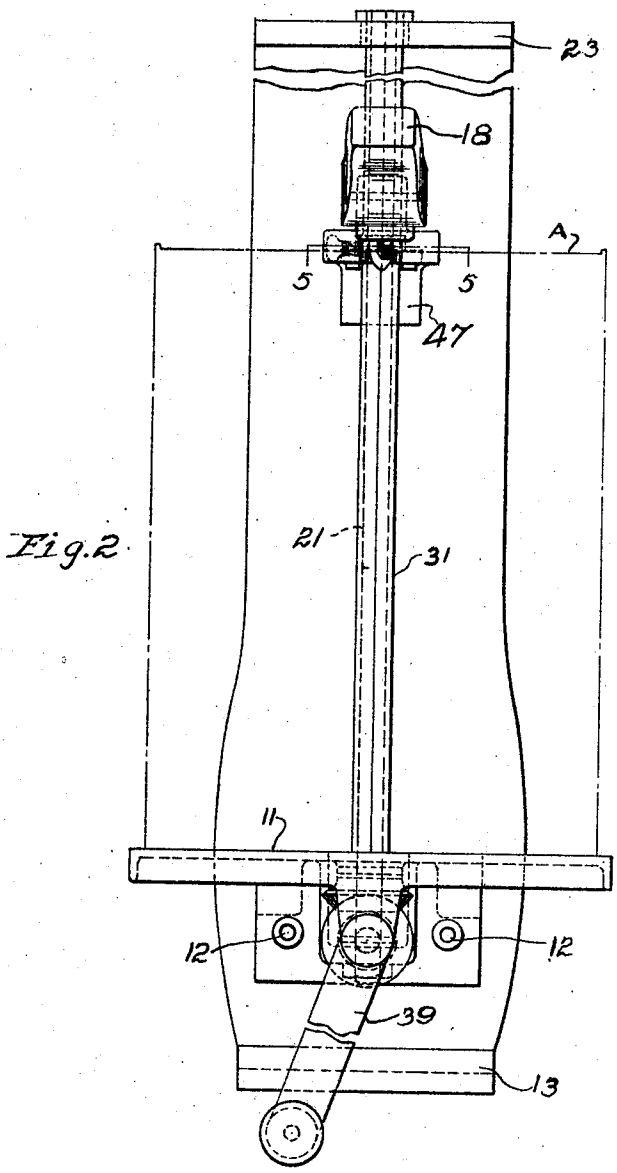



Fig. 2

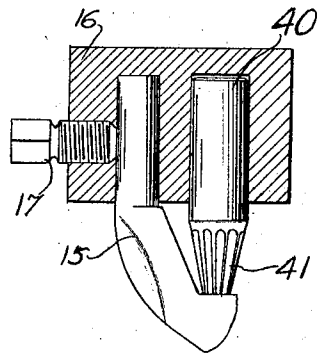



Fig. 4

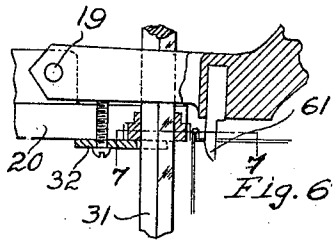



Fig. 6

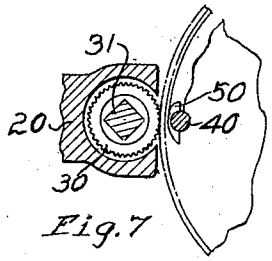



Fig. 7

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# UNITED STATES PATENT OFFICE

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## CAN OPENER

Application filed May 23, 1924. Serial No. 715,329.

This invention relates to machines for opening cans and more particularly to a machine having a relatively stationary cutting element adapted to engage a can while the can is rotated.

One of the objects of my invention is the provision of a can opening machine which is simple in construction, convenient and easy to operate and is adapted to work satisfactorily on any shaped can. In this connection my invention contemplates the provision of a machine which eliminates the necessity for clamping devices to position the can with relation to the cutting member.

A further object of my invention is the provision of a cutting member having such characteristics that the severed edge of the tin is automatically pressed downwardly and outwardly, against the sides of the can, so as to permit safe removal of substantially the entire contents of the can.

I have illustrated my invention in the preferred form in the accompanying drawing which will hereinafter be fully set forth in detail. The essential characteristics of my invention, however, will be summarized in the claims.

In the drawings Fig. 1 is a longitudinal section taken through a can opener embodying my invention; Fig. 2 is a front elevation of the device shown in Fig. 1; Fig. 3 is a horizontal section through a portion of the device showing the cutter actuating member in plan view; Fig. 4 is a section taken on the line 4—4 in Fig. 3 and showing the cutting element on an enlarged scale. Fig. 5 is a horizontal section taken on the line 5—5 in Fig. 2; Fig. 6 is a vertical section through a modified construction of cutting element; and Fig. 7 is a section taken on the line 7—7 in Fig. 6.

I have shown my invention in connection with a standard 10, which is adapted to be secured to a wall or a bracket, and a table 11, which may be attached to the standard by securing members 12 and which functions as a can support. The standard may also have a laterally extending portion 13 to permit attachment to a table if desired. The can to be cut is placed as indicated at "A" in upright position upon the table 11 and directly beneath the cutting means.

The cutting means preferably embodies a knife 15 which is adjustably positioned in an arm 16 as by a thumb screw 17. This arm is shown as having a handle 18 at the outer end thereof and as being pivotally mounted as at 19 adjacent the inner end to a bracket 20. To permit vertical adjustment for accommodating various sized cans, I have shown the bracket 20 as being slidably mounted on a guide 21 and as being adapted to be adjustably positioned thereon by binding screw 22. The guide member is illustrated as being supported at the top within a forwardly extending portion 23 of the standard and at the bottom by the plate 11. The bottom of the guide member may be reduced, as at 24, to provide a shoulder which engages the top of the table. The guide member may be maintained in adjusted position by a member 25 which engages the underside of the table and is in threaded engagement with the reduced portion 24.

To rotate a can during the cutting operation, I may utilize a feed wheel 30 having a non-circular opening through which a complementary shaped shaft 31 extends. The feed wheel, as shown, is disposed within a recess adjacent the outer end of the bracket 20 and is maintained in such position by a plate 32 which engages the underside thereof, and on opposite sides of the shaft 31. A securing member 33 may be employed for maintaining the plate in adjusted position. The upper end of the shaft 31 is journalled in the extension 23, while the lower end thereof is suitably journalled in the table 11. Rigidly mounted on the lower end of the shaft 31, I have shown a bevel gear 34 which is adapted to be rotated by a bevel gear 35 on a shaft 36. As shown, the shaft 36 is supported by lugs 37 and 38 respectively which extend downwardly from the table. A crank arm 39 may then be employed for rotating shaft 36.

To maintain the can in close fitting engagement with the feed wheel, I have illustrated a follower 40 which is loosely mounted in the arm 16 directly behind the knife. In this connection, it is to be noted that the vertical axis of the knife and follower are

disposed on opposite sides of a plane passing through the center of the can and the axis of the shaft 31. This provides in effect a three-point engagement between the cutting mechanism and the can wherefore the can is firmly held against lateral movement during the cutting operation. The lower end of the follower may be knurled as at 41, while the knife may be extended rearwardly to engage the bottom of the follower and to prevent it from falling out of the arm 16. This follower functions not only to cooperate with the feed wheel in rotating the can, but also to turn down the remaining portion of the top of the can between the cutter and the periphery of the can, thereby lessening the danger to injury in removing the contents of the can, and also increasing the size of the opening to substantially the full cross-sectional area of the can.

To facilitate insertion of a can beneath the cutter, I have shown a spring 45, one end of which engages the arm 16 and the other end of which engages the bracket 20. This functions to maintain the arm in the inclined position shown in Fig. 1.

To prevent injury to the cutting point in the event the bracket is lowered, I have illustrated a compression spring 46 which surrounds the guide 21 and of such length as to engage a shoulder 47 on the hub of the bracket whenever the bracket is lowered or is inadvertently dropped before the point engages the top of the table.

In Figs. 6 and 7 I have shown a modification of my invention wherein the follower is eliminated from the cutting element, and wherein the cutter is provided with a heel which is enlarged as at 50. This heel engages the severed edge near the top of the can and functions to force it downwardly and outwardly against the sides thereof in the same manner as the follower heretofore described. The point of the knife and the heel thereof cooperate with the feed wheel to grip the can since a plane passes through the axis of the wheel and the axis of the can extends between the edge and the heel of the cutter. Moreover, as shown in Fig. 6, the cutter has the inner side thereof curved, as at 61, wherefore the can is urged inwardly against the feed wheel whenever downward pressure is exerted on the handle 18.

To operate a device made in accordance with my invention, the bracket 20 is raised sufficiently to permit entrance of the can beneath the cutter. Thereupon the operator presses downwardly on the handle 18 with one hand, while with the other hand turns the crank arm 39. This rotates the shaft 36, and through the gears 34 and 35 rotates the shaft 31. The downward pressure on the arm 18 forces the knife and follower into engagement with the top of the can wherefore the can is forced against the feed wheel 30. The lower end of the follower, as shown at 41, is tapered wherefore increased downward pressure on the handle 18 effects an increasing pressure of the can against the feed wheel. As heretofore explained the can is prevented from shifting since the cutter and follower are offset with relation to a plane passing through the center of the can and the axis of the feed wheel. Thus the can is rotated so long as the arm 39 is revolved, wherefore the extent to which the can is cut can be controlled at will.

In view of the foregoing description, it will be understood that my invention provides a can opening machine which is very simple in construction, easy to operate and durable in use. Moreover my invention is of such a character that the can is automatically rotated without the necessity for complicated clamping mechanism. In addition, I provide a device which is capable of cutting cans of various shapes and sizes and of so operating on the cans that the remaining strip adjacent the peripheral edges of the can is automatically turned down thereby reducing the danger of injury in removing the contents of the can.

Having thus described my invention I claim:

1. A can opening machine comprising in combination, a can support, a shaft journaled therein, a feed wheel splined on the shaft, means for rotating said shaft, and a cutter associated with the feed wheel.

2. A can opening machine comprising in combination, a can support, a shaft journaled therein, a bracket slidably mounted upon the shaft, a feed wheel splined to the shaft, and associated with said bracket, said feed wheel being adapted to engage the side of a can positioned on said support, an arm pivotally mounted on the bracket, a cutter fixed to the arm and adapted to engage the top of the can and to force the can against the feed wheel whereby rotation of the wheel effects rotation of the can during the cutting operation.

3. In a can opening machine, the combination with a can support, of a post journalled therein, means for rotating the post, a feed wheel splined to the post and adapted to engage the side of the can, a cutter, and means associated with the cutter for cooperating with the feed wheel to effect rotation of the can during the cutting operation.

4. In a can opening machine, the combination with a can support, of a vertically extending shaft journalled in said support, a bracket movable with relation to said shaft, an arm mounted on the bracket, a feed wheel associated with the bracket and splined to said shaft, a cutter carried by the arm and means associated with the arm for cooperating with the wheel to effect rotation of the can during the cutting operation.

5. In a can opening machine, the combination with a can support, of a vertically extending guide member carried by the support, a spring surrounding the guide member adjacent the bottom end thereof, a bracket slidable on the guide member and adjustable with relation thereto, an arm pivotally mounted on the bracket, a cutter carried by the arm, said spring having such characteristics that the cutter is prevented from engaging the support when said bracket is in the lowermost position.

6. In a can opening machine, the combination with a can support, of a bracket movable vertically with relation to the support, an arm mounted on the bracket, a feed wheel associated with the bracket, a vertically extending shaft cooperating with said wheel, a member disposed beneath the support for operating said shaft, said wheel being adapted to engage the side of the can, a cutter carried by the arm outside the wheel and adapted to engage the top of the can, and means whereby downward pressure on said arm forces the can into engagement with said wheel and whereby rotation of the wheel effects movement of the can during the cutting operation.

7. In a can opening machine, the combination with a can support, of parallel upright members mounted on the support, one of said members being rotatable and having a gear adjacent one end thereof, means carried by the support for rotatitng said gear, a feed wheel splined to the rotating member, a bracket adjustably mounted on the other member and having means associated therewith for retaining the feed wheel in adjusted position with relation to the bracket, an arm pivotally mounted on the bracket above said wheel, a cutter mounted on the arm, and means for normally holding the arm in such position that the top of a can may be forced against the feed wheel while the cutter clears the top of said can.

In testimony whereof, I hereunto affix my signature.

STACEY A. HAINES.