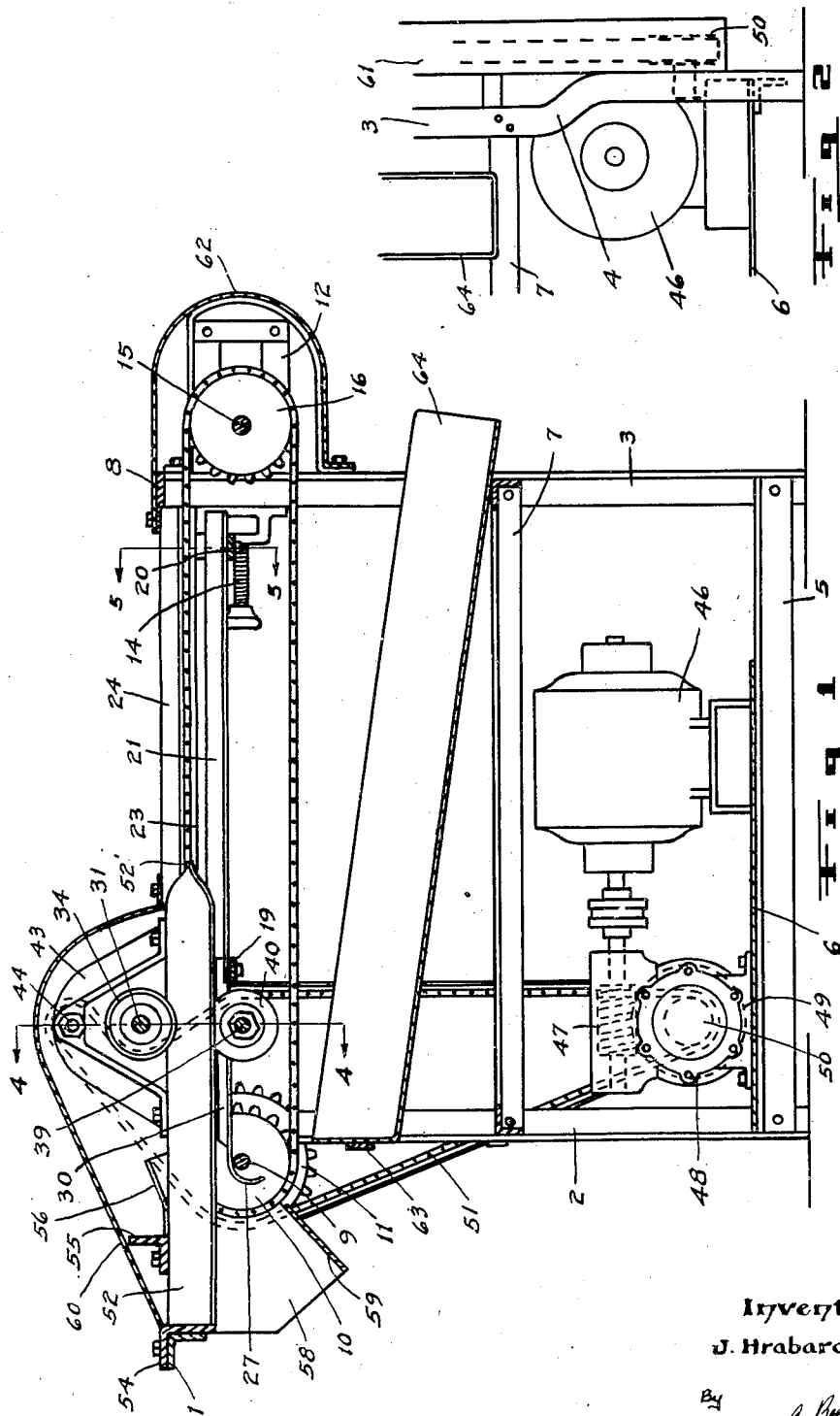


J. HRABARCHUK
CAN OPENING MACHINE

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3 Sheets-Sheet 1



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March 1, 1949.

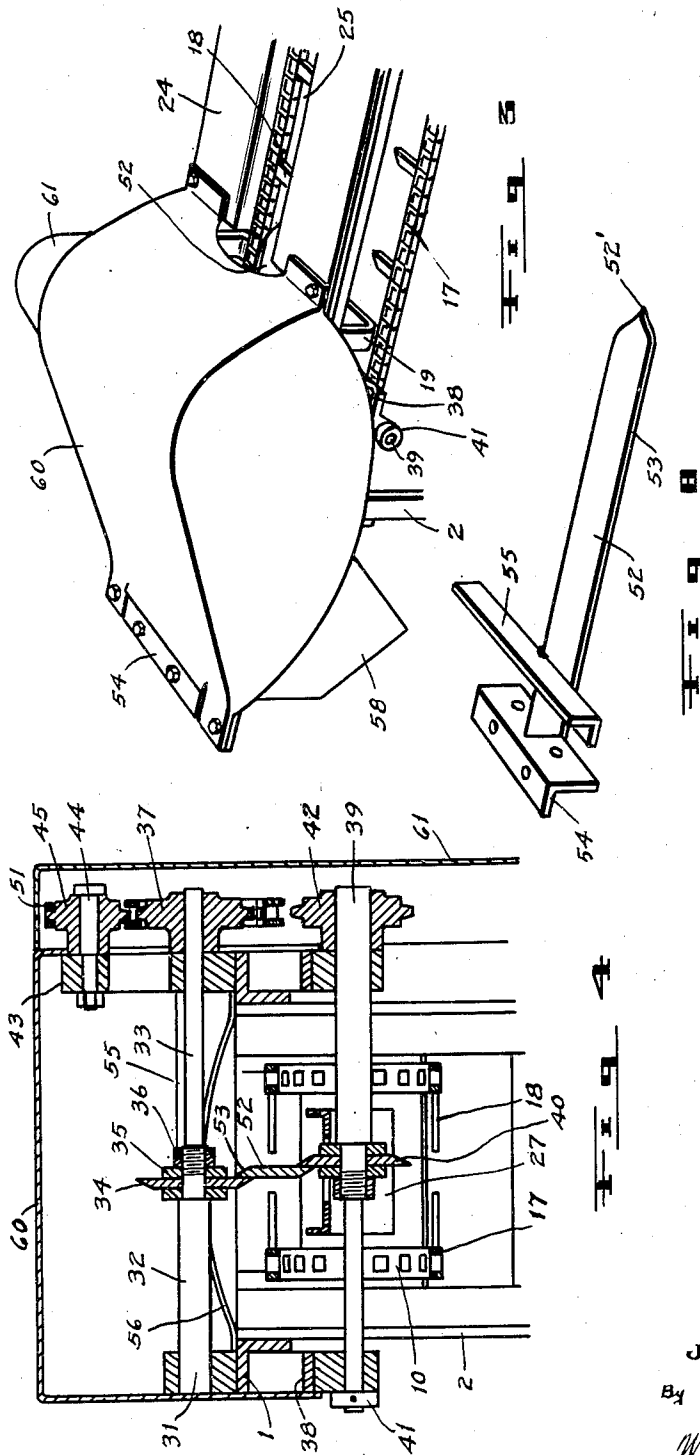
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CAN OPENING MACHINE

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3 Sheets-Sheet 2



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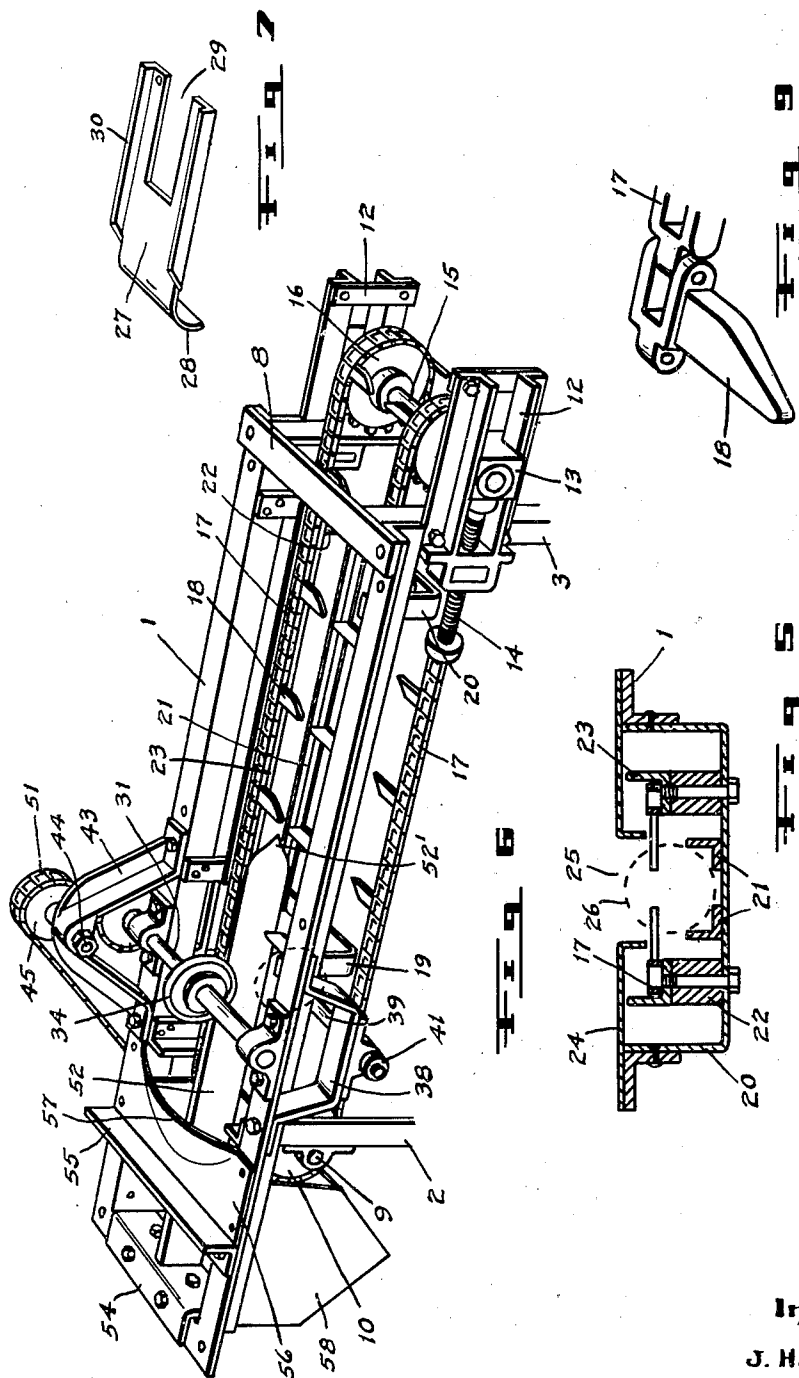
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CAN OPENING MACHINE

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CAN-OPENING MACHINE

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3 Claims. (Cl. 30—8)

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In the canning of fruits, vegetables, meats, etc., many of the cans are improperly sealed and these cans have to be re-opened and the contents re-canned. The cans are usually opened by girls with a small can opener and, as this is a slow process, a large number of girls have to be employed for the purpose.

The principal object of the present invention is to provide a power driven machine for opening the cans.

A further object of the invention is to provide a machine which will cut the cans lengthwise and completely in half so that the contents can be quickly removed for the re-canning process.

A further object of the invention is to provide means on the machine for separating the juices of the contents from the solid matter thereof.

A further object of the invention is to provide means for quickly altering the machine for cutting different sizes of cans.

A still further object of the invention is to construct the machine in a simple and sturdy manner for continuous operation over a long period of time.

With the above important and other minor objects in view which will become more apparent, as the description proceeds, the invention consists essentially in the construction and arrangement of parts hereinafter more particularly described, reference being had to the accompanying drawings in which:

Figure 1 is a vertical sectional view centrally through the machine.

Figure 2 is a partial end view of the lower part of the machine.

Figure 3 is an enlarged perspective view of the upper part of one end of the machine.

Figure 4 is an enlarged vertical cross sectional view taken on the line 4—4, Figure 1.

Figure 5 is an enlarged profile section taken on the line 5—5, Figure 1.

Figure 6 is a perspective view of the upper part of the machine with the protecting covers removed.

Figure 7 is a perspective view of a supporting plate.

Figure 8 is a perspective view of the cutting blade.

Figure 9 is an enlarged perspective view of one of the chain lugs.

In the drawings like characters of reference indicate corresponding parts in the several figures.

A U-shaped angle iron frame 1 is supported by four angle iron legs 2 and 3, the lower part of the legs being slightly off-set as at 4. The lower part of the side legs are connected by angle irons 5 which support a plate platform 6. A rectangular angle iron reinforcement 7 is also provided partly up the legs and supported thereby.

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The open end of the U-shaped frame 1 is connected by a cross plate 8.

The upper ends of the legs 2 are provided with bearings which support a cross shaft 9. This shaft carries a pair of sprockets 10, while the far end is provided with a driving sprocket 11. The upper ends of the angle legs 3 support a pair of brackets 12 which slidably carry adjustable bearings 13 operated by the screws 14. The bearings 13 receive a cross shaft 15 which carries a pair of sprocket wheels 16. A pair of endless chains 17 connect the sprockets 10 and 16. At spaced intervals, the chains are provided with inwardly projecting lugs 18 (best shown in Figure 9) which terminate a short distance from each other to provide a space therebetween.

A pair of U-shaped straps 19 and 20 are supported from the inner sides of the frame 1. The central parts of these straps support the ends of a pair of lengthwise angles 21, best shown in Figure 5. On the same straps, and on either side of the angles 21, spacing sleeves 22 are mounted and support a further pair of lengthwise angles 23 which underlie the upper lengths of the chains 17 and support same in their movement. A pair of horizontal L-shaped guard plates 24 are fastened to the side angles of the frame 1, overlie the lengthwise angles 21 and 23, and are spaced apart to provide an inserting space 25 therebetween.

With this arrangement, a cylindrical can can be inserted through the inserting space 25, between a pair of lugs 18 and it will rest on and between the angles 21 as indicated in dotted outline at 26 in Figure 5. If the chains are moving, the lugs will slide the can along the angles 21.

A supporting plate 27 is shown in Figure 7. This plate is curved as at 28 at one end while the opposite end is provided with an opening 29 and the sides are turned up as at 30. The open ended portion of this plate is received between the angles 21 and the U-shaped strap 19 extends along the machine and the curved end 28 passes around the shaft 9 for a purpose later described.

A cross shaft 31 is mounted in bearings on the upper surfaces of the frame 1. By reference to Figure 4 of the drawings, it will be seen that one half of the shaft is large as at 32 while the other half is reduced as at 33 to receive a cutting disc 34. Suitable washers 35 are provided on either side of the disc and the assembly locked by a nut 36. The shaft is driven by a sprocket wheel 37 mounted on the reduced end. A pair of U-shaped brackets 38 are supported below and on either side of the frame 1. These brackets support a cross shaft 39 which is identical to the shaft 31 but reversed in position and is directly therebelow. This shaft also supports a cutting disc 40 and the reduced end is provided with a thrust collar 41, while the large end is provided

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with a sprocket 42. The disc 40 is received in the slot 29 of the supporting plate 27. A V-shaped angle bracket 43 is supported on one side of the frame 1 and the upper end provides a bearing for a stub shaft 44. This stub shaft rotatably supports a sprocket wheel 45.

An electric motor 46 is suitably mounted on the plate 6 and drives a worm 47 mounted in a reduction gear casing 48. The worm 47 drives a worm gear 49 which in turn drives a sprocket 50 on the same shaft. An endless chain 51 passes around the sprocket 50, up over the sprocket 42, around the sprocket 37, over the sprocket 45, then down and around the sprocket 11, then back to the sprocket 50. From the above driving connections it will be seen that by operating the motor, the endless chains 17 will be continuously driven by the sprockets 10 while the cutting discs 34 and 40 will be revolving in opposite directions.

A cutting blade 52 is best shown in Figure 8. One end of this blade is provided with a piercing point 52' while the upper and lower edges are chamfered as indicated at 53. The end, removed from the point, is welded to an angle bar 54, which is bolted to the closed end of the frame 1 while a cross angle 55 is centrally welded to the upper edge of the blade and the ends of the angle are supported by the sides of the frame 1. When this blade is fastened into the frame 1 as described it will project lengthwise of the machine and centrally of the frame 1 so that the moving lugs 18 will pass on either side and the cutting discs 34 and 40 will frictionally ride on opposite sides.

On the frame 1 and between the cross angle 55 and the V-shaped bracket 43, a cross plate 56 is mounted. The central part of one side of this cross plate is dipped upwardly in a curve as shown at 57 for a purpose later described. A U-shaped plate 58 is also mounted between the sides of the frame 1 and under the angle 55. The cross portion 59 thereof is at a slope so that the plate 58 acts as a chute. A suitably curved canopy 60 encloses the working parts of one end of the machine, a casing 61 encloses the chain 51 while a further U-shaped casing 62 encloses the sprockets 16 and adjustable bearings. A bar 63 passes across the legs 2 and supports one end of the sloping U-shaped trough 64. The lower end of the trough is supported by the frame 7.

In operation, and assuming that the motor has been started and one or two operators are standing on either side of the machine, the operators will pick up the cans to be opened and will insert them through the inserting space 25 with the sides of the cans horizontal. The cans will drop onto the angles 21, between the lugs 18, while the lugs will move the cans along the angles to and against the blade 52. The point 52' of the blade will pierce the end of the can and the can will ride up onto the blade, the blade being inside the can. As the lugs continue to move the can along the blade, the cutting discs 34 and 40, in conjunction with the edge of the blade, will cut the sides of the can and the piercing point 52' will then shear the remaining end of the can. Accordingly, the can with the contents will fall into two pieces while the juices from the contents will fall through between the angles 21 and be received by the trough 64 and be delivered into a suitable container. The parts of the can will

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continue along the sides of the blade until they reach the dipped portion of the plate 56 which will deflect them downward. At this time the parts of the can will be riding on the supporting plate 27. After being dipped by the plate 56, the two portions of the can will pass off the curved end 28 of the supporting plate and be guided by the chute 58 into a suitable receptacle. As the cans have been sheared completely in half it will be a simple matter to separate the contents and the cans for the re-canning process.

When a different sized can is to be opened, a different sized blade 52 will be required. Accordingly, the bolts holding the blade assembly will be removed and another assembly, having the correct blade, will be substituted.

What I claim as my invention is:

1. A can opening machine, comprising: a framework having a pair of spaced endless chains mounted for movement thereon; lugs spacedly carried by said chains and projecting inward toward each other; a pointed blade fastened to said framework, lengthwise to said chains and therebetween; cutting discs mounted on said framework and positioned to ride against the edges of said blade; and means for driving said chains and said cutting discs.

2. A can opening machine, comprising: a frame having a pair of spaced endless chains mounted for movement thereon; lugs carried by said chains in spaced relationship therealong; said lugs projecting inward toward each other; a blade having a shearing pointed end mounted on said frame, lengthwise to said chains and therebetween; shafts mounted on said frame supporting cutting discs which are positioned to ride against the edges of said blade; means for driving said chains and said cutting discs; and guide means for directing cans lengthwise against the point of said blade under pressure from said lugs.

3. A can opening machine, comprising: a framework having a pair of spaced endless chains mounted for movement thereon; lugs spacedly carried by said chains and projecting inward toward each other; a pointed blade fastened to said framework, lengthwise to said chains and therebetween; cutting discs mounted on said framework and positioned to ride against the edges of said blade; means for driving said chains and said cutting discs; means mounted on said frame to receive cans horizontally and to guide same against the point of said blade under pressure from said lugs for shearing purposes; means for deflecting and guiding said sheared cans away from said machine; and trough means for receiving the juices from said sheared cans.

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