

June 9, 1936.

C. T. WALTER

2,043,684

SOAP CUTTER

Filed June 23, 1934

3 Sheets-Sheet 1

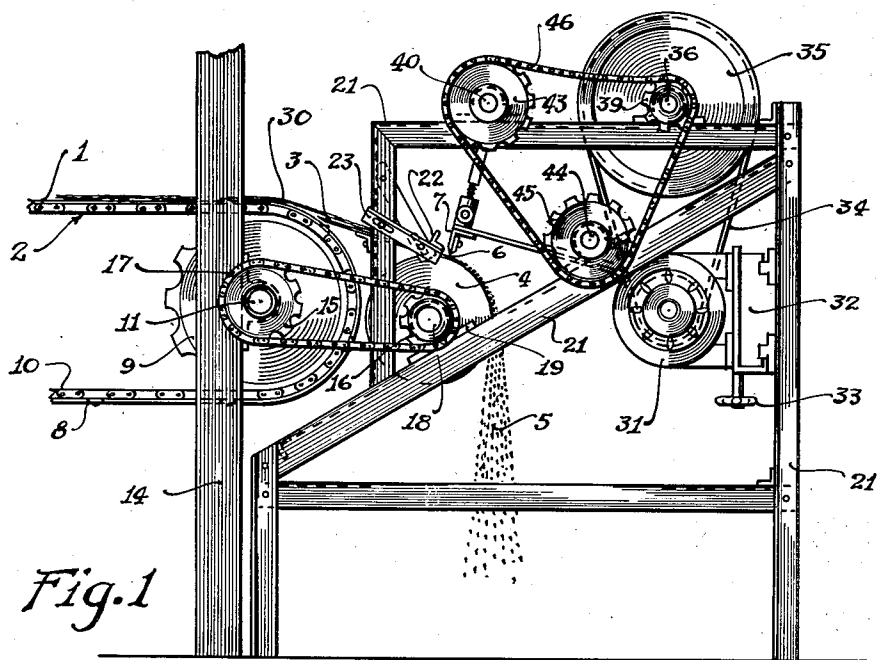


Fig. 1

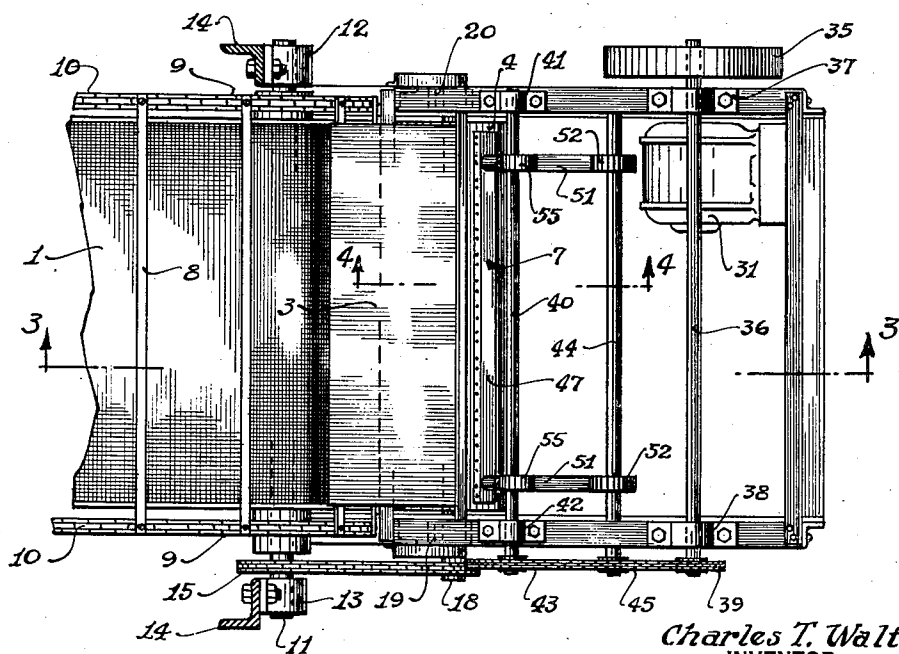


Fig. 2

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3 Sheets-Sheet 2

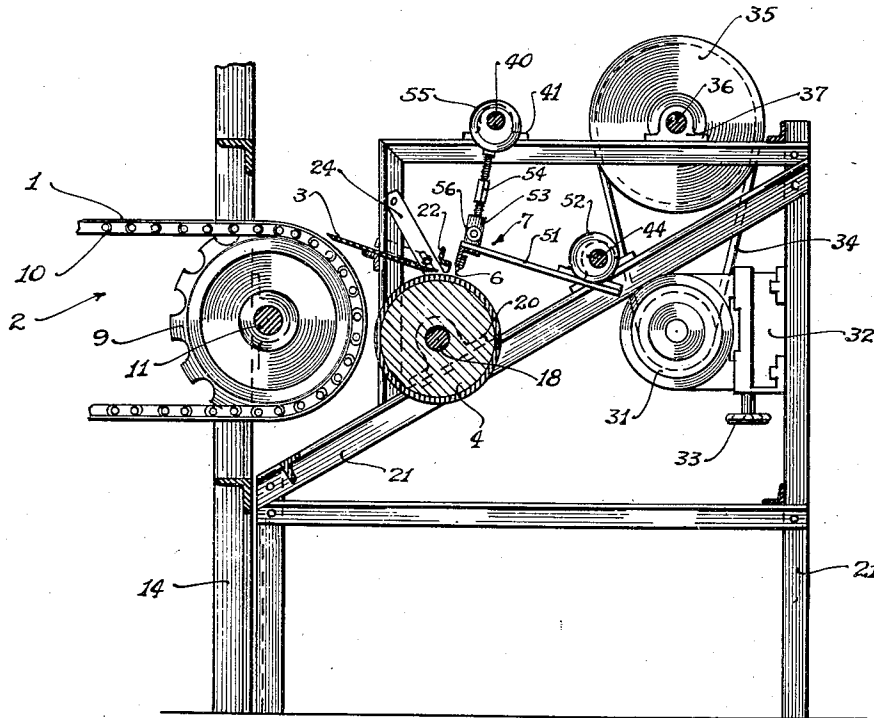


Fig.3

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3 Sheets-Sheet 3

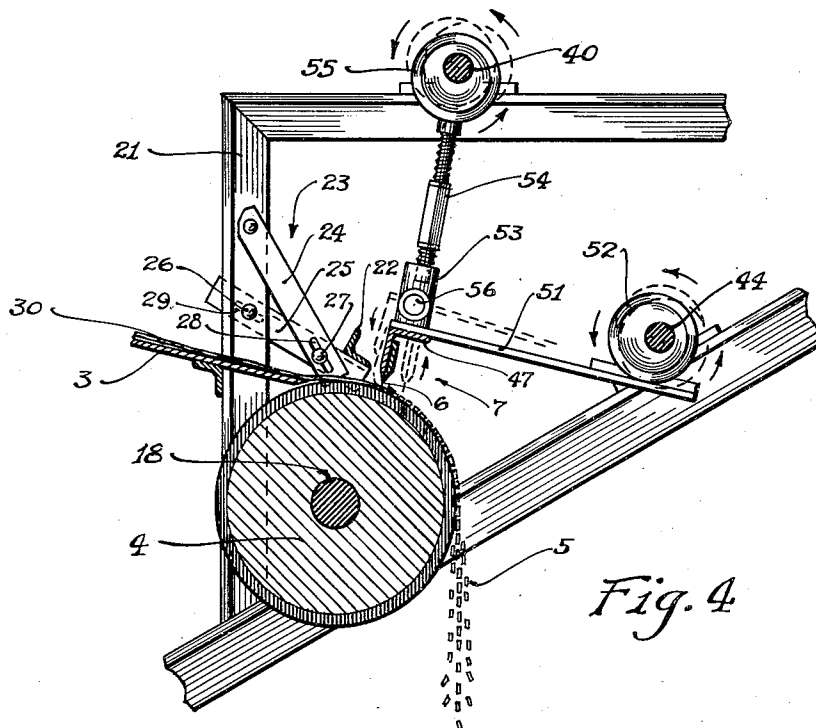


Fig. 4

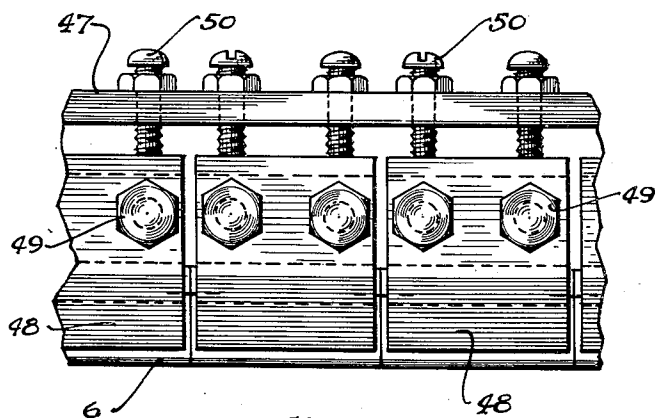


Fig. 6

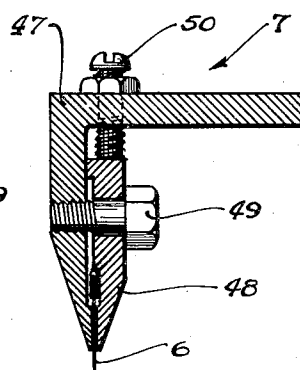


Fig. 5

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UNITED STATES PATENT OFFICE

2,043,684

SOAP CUTTER

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Application June 23, 1934, Serial No. 732,001

7 Claims. (Cl. 25—106)

This invention relates to cutting devices.

One of the objects of the invention is to provide a device for cutting lengths of fragile tubular material into relatively small pieces in a continuous manner.

Another object of the invention is to provide a device adapted to cut tubular soap such as is described and claimed in my copending application entitled Soap product and method of making same, Serial No. 703,350, filed December 21, 1933.

Other objects of the invention will be apparent from the description and claims which follow.

In the drawings similar reference characters in the several figures represent identical parts.

Figure 1 is a side view of the device.

Figure 2 is a plan view of the device shown in Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 2.

Figure 4 is a view partly in section on line 4—4 of Figure 2 showing the cutting element and adjacent parts in detail.

Figure 5 is a sectional view of the cutting element.

Figure 6 is a plan view of a portion of the cutter showing the manner of mounting.

Referring now more particularly to Figure 1:

Tubes of more or less wet plastic soap travelling on belt 1 of conveyor 2 pass over plate 3 to anvil roller 4 and are chopped into pieces as 5 by the blade 6 of cutter 7. Screen belt 1 is supported by cross pieces 8 extending between chains 10 driven by sprockets 9. Sprocket gears 9 are mounted upon and driven by shaft 11 which is journaled in bushings 12 and 13 mounted upon conveyor frame 14. Gear 15 is also mounted upon shaft 11 and drives gear 16 through chain 17. Gear 16 is mounted upon shaft 18 as is anvil roller 4. Shaft 18 is journaled in bushings 19 and 20 mounted upon angle iron frame 21.

Leveler 22 is bolted at each end to brackets 23. Each bracket 23 comprises links 24 and 25 mounted on frame 21. The distance of leveler 22 from anvil roller 4 may be adjusted by means of bolts 26 and 27 and slots 28 and 29.

It is the purpose of leveler 22 to prevent tubes of soap as 30 from being thrown clear of anvil roller 4 due to the reciprocating action of cutter 7.

Motor 31 is attached to bracket 32 which is mounted on frame 21 and may be adjusted upwardly and downwardly by screw 33. Belt 34 drives wheel 35 which is mounted on one end of shaft 36 journaled in arbors 37 and 38. Shaft 36 carries sprocket gear 39 at its opposite end. Shaft 40 is journaled in arbors 41 and 42 and carries sprocket gear 43. Shaft 44 journaled in arbors mounted on frame 21 carries sprocket gear 45. Chain 46 drives sprocket gears 43 and 45 receiving power from sprocket gear 39.

The construction of cutter 7 is clearly shown in Figures 5 and 6, knife blade 6 being clamped to knife frame 47 by blades 48, securely held by bolts 49 and bolts 50. The mounting of the cutter 7 may be clearly observed in Figures 2 and 4. The frame 47, which extends the full width of the machine, is secured to arms 51 integral with eccentric sheave 52 mounted upon shaft 44. Arms 53, which for convenience in adjustment may include turn buckles 54, are secured to eccentric 55 mounted upon shaft 40 and pivoted at 56 on frame 47.

This mounting of the cutter gives the cutting edge of the knife blade a motion along a curve such that at the time its cutting edge is in contact with roller 4 it will have a velocity substantially equal to that of the surface of the roller and throughout the entire cutting range it will be moving in the same direction and with a velocity approximately equal to the motion of the material to be cut. With this arrangement there is nothing which tends to interfere with the smooth, continuous, and uniform motion of the uncut material through the cutting device.

In practice the eccentricity secured by eccentric sheave 55 and vertical connecting rods 53 is about $\frac{1}{4}$ ", giving a total vertical component to the knife of about $\frac{1}{2}$ ", the total horizontal motion of the knife blade being about $\frac{3}{8}$ " based upon an eccentricity of about $\frac{1}{8}$ ".

The timing relationship between the horizontal and vertical components is such that as the knife is descending and cutting the tubes, it will be moving in the direction of normal motion of the tubes and when the knife is ascending and is out of the range of the motion of the tubes, it will be moving in a direction opposite to the normal motion of the tubes.

It has been found in practice that it is desirable to keep the displacement of the knife between its extreme positions as small as possible, in order to reduce the inertia forces acting upon the various parts and also to keep to a minimum the velocity of impact of the knife with the material to be cut.

The size of the pieces into which the material is cut is dependent, of course, upon the relationship of the speed with which the material is fed to the anvil roller 4 by the conveyor 1 and the speed of the operation of the knife.

The extreme positions of the knife are shown in Figure 4 in dotted lines.

I claim:

1. In combination, means for continuously feeding material to a cutter, a guiding leveler for said material, a rotating anvil in operative relationship with said cutter and means for reciprocating said cutter vertically and laterally.

2. In combination, a rotatable cylindrical anvil, a reciprocating cutter in operative relationship therewith and a leveler positioned before said cutter to guide material being fed thereto.

3. In combination, a rotatable cylindrical anvil and a reciprocating cutter in operative relationship therewith, said reciprocating cutter being driven by arms mounted on eccentric sheaves on drive shafts whereby said cutter is caused to follow in the direction of travel of said anvil while cutting material passing thereover and is returned to cutting position out of contact with said anvil and with material thereon, the return of the said cutter being in a direction opposite to the direction of travel of said anvil, and an adjustable leveler positioned before said cutter guide material being fed thereto.

4. In combination, a rotatable cylindrical anvil and a reciprocating cutter in operative relationship therewith, said reciprocating cutter being driven by arms mounted on eccentric sheaves on drive shafts whereby said cutter is caused to follow in the direction of travel of said anvil while cutting material passing thereover and is returned to cutting position out of contact with said anvil and with material thereon, the return of the said cutter being in a direction opposite to the direction of travel of said anvil, and a leveler positioned ahead of the cutting position of said cutter to guide material being fed thereto.

5. In combination, a rotatable cylindrical anvil, a reciprocating cutter in operative relationship therewith and an adjustable leveler positioned before said cutter to guide material being fed thereto.

6. In combination, a rotatable cylindrical anvil and a reciprocating cutter in operative relationship therewith, said reciprocating cutter being driven by arms mounted on eccentric sheaves on drive shafts whereby said cutter is caused to follow in the direction of travel of said anvil while cutting material passing thereover and is returned to cutting position out of contact with said anvil and with material thereon, the return of the said cutter being in a direction opposite to the direction of travel of said anvil, an endless conveying means carrying material to be fed to said cutter over said anvil and a plate bridging the gap between said conveying means and said anvil.

7. In combination, a rotatable cylindrical anvil and a reciprocating cutter in operative relationship therewith, said reciprocating cutter being driven by arms mounted on eccentric sheaves on drive shafts whereby said cutter is caused to follow in the direction of travel of said anvil while cutting material passing thereover and is returned to cutting position out of contact with said anvil and with material thereon, the return of the said cutter being in a direction opposite to the direction of travel of said anvil, an endless conveying means carrying material to be fed to said cutter over said anvil, a plate bridging the gap between said conveying means and said anvil, and a leveler positioned over said anvil between said plate and said cutter to guide material being fed to said cutter.

CHARLES T. WALTER.

CERTIFICATE OF CORRECTION.

Patent No. 2,043,684.

June 9, 1936.

CHARLES T. WALTER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 25, claim 3, before the word "guide" insert to; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 25th day of August, A. D. 1936.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.