June 17, 1941. J. W. STEELE 2,246,394

CAN CRUSHING MEANS

Filed Dec. 24, 1938

Fig. 1.

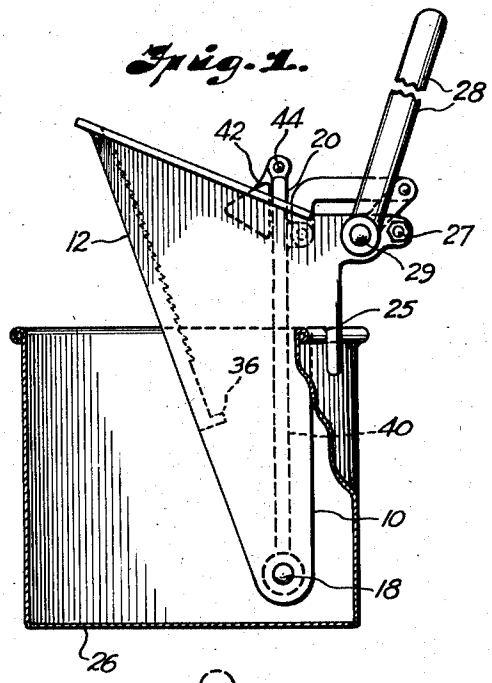


Fig. 2.

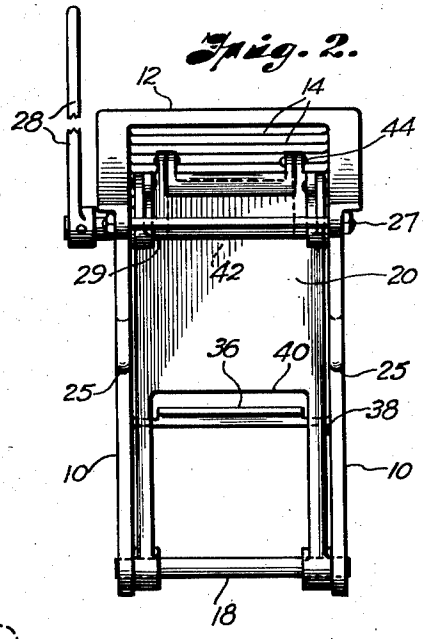


Fig. 4.

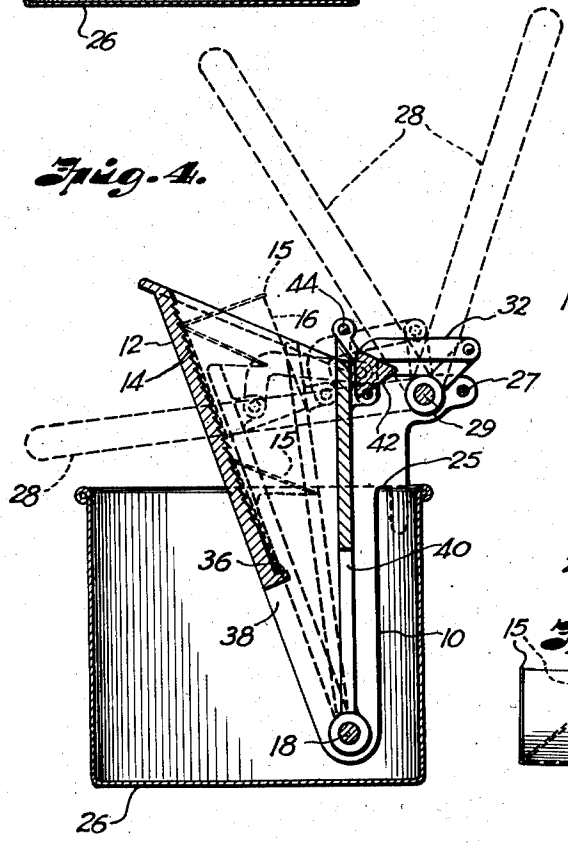


Fig. 3.

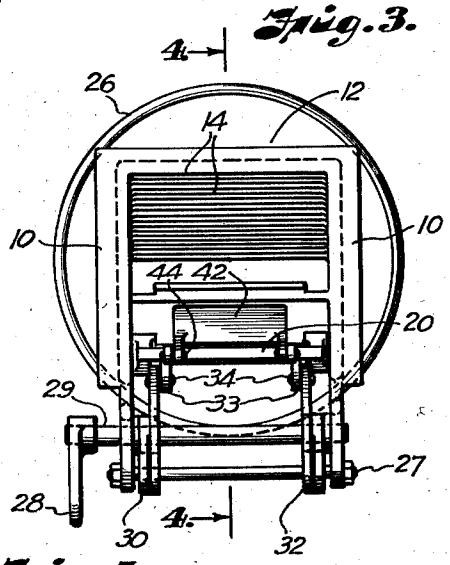


Fig. 5.

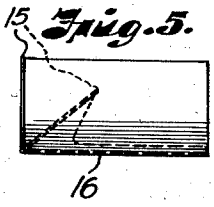


Fig. 6.



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CAN CRUSHING MEANS

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3 Claims. (Cl. 153—10)

This invention relates to means for crushing cans and the like in order to flatten and compress the material comprising the cans into as small and compact form as possible, with a view to minimizing the storing space necessary for discarded containers until the same can otherwise be disposed of.

Accordingly, I have devised a can crushing means adapted for convenient operation for the purpose of speedily and easily crushing or mashing the empty containers in such a manner as to reduce the same into a flattened and compact form.

One primary feature of the invention consists in a novel can crushing method whereby the open end portion of the empty can or container is subjected to a crushing operation which results in drawing the opposite or bottom end of the can over toward said open end, and thereafter flattening the bottom end of the can down against the previously crushed or flattened part of the can.

As one practical form of apparatus for practicing the invention, I have devised a contrivance adapted to be fitted to a suitable receptacle for receiving the crushed product, and comprising fixed and movable crushing jaws with means for actuating the movable jaw and also means facilitating the positioning and holding of the can in place for the successive crushing operations and permitting the crushed product to be discharged into said receptacle.

With the foregoing stated objects in view, the invention will now be described by reference to the accompanying drawing illustrating a practical and efficient form of apparatus whereby my invention may be practiced, after which the invention will also be particularly stated and defined by the appended claims.

In the drawing—

Figure 1 is a side elevation illustrating a can crushing means constructed in accordance with the present invention, and mounted in operative relation to a receptacle for receiving the crushed product;

Figure 2 is a front elevation of the can crushing device;

Figure 3 is a plan view of the same mounted in operative relation to a receptacle;

Figure 4 is a vertical sectional view, representing a section taken on the line 4—4 of Figure 3, with dotted lines representing different positions of the movable parts, as well as of the can being operated upon;

Figure 5 is a detail view showing a partly crushed can; and

Figure 6 is a similar view showing the can in its completely crushed state.

It is well known what a nuisance empty cans are, in this era when so great a percentage of foods of all sorts are sold in package form, and particularly in tin cans or containers which, when in empty condition, occupy just as much space as originally and require all that space for storing the discarded containers until they can be disposed of to the trash carrier, or hauled away. It is therefore obvious that if means were available for the purpose of reducing the space occupied by a litter of cans, the nuisance would be largely abated, and likewise the expense of disposing of the discarded containers correspondingly diminished by reducing the volume of the accumulation, and also the frequency required for their removal.

The present invention has for its direct object the supply of an efficient method and means for the accomplishment of this result, in which the empty can is subjected to two successive treatments, whereby one end of the can is first flattened, which simultaneously bends the other end of the bottom slightly over toward said flattened portion, and then the second crushing treatment completes the operation by crushing said bottom end of the can down flat against the remainder of the can.

Referring now to the drawing in detail, the apparatus is shown as comprising a frame construction providing side walls 10 at opposite sides of the sloping rear wall constituting the fixed crushing jaw 12, the inner face of which is formed with transverse ribs or teeth to provide a series of shoulders 14 for engagement with the bead 15 around the bottom of a can 16.

At the bottom of the side walls 10 is mounted a transverse rod or shaft 18 for journaling the lower end of the pivoted jaw 20, the upper end of which travels in an arc intersecting the fixed jaw 12 some distance below the upper edge of the fixed jaw. The front edges of the side walls 10 are also provided with slots 25 for hooking into engagement with the upper edge or rim of a suitable receptacle 26, and thereby supporting the apparatus within said receptacle, as is illustrated in Figures 1, 3 and 4.

As one suitable means for operating the movable jaw, I provide a handle 28 secured to one end of a rod or shaft 29, the ends of which are journaled in the upper outer corners of the side walls 10, which walls are braced by means of a

tie bolt 27. Each end of the shaft 29 carries a crank arm 30 which is pivoted to one end of an L-shaped link 32; and the other ends of the links 32 are pivotally connected to lugs 33 on the outer face of said movable jaw 20, as indicated at 34.

Below the bottom edges of both jaws 12 and 20 are open spaces between the side walls 10, as indicated at 38 and 40, respectively, for permitting the crushed cans to pass on through into the receptacle 26.

The upper end portion of the movable jaw 20 may be further provided with a creasing block or rib 42, shown hinged or pivoted as at 44 to said jaw 20 in such a way as to allow it to be turned from inoperative position as represented by the dotted lines in Figure 4 into operative position between the jaws 12 and 20 as illustrated in Figures 1–3. The function of the block or rib 42 is to effect initial creasing or bending of the body of certain cans, such as particularly large cans or containers of extra heavy stock, thereby facilitating the subsequent operations on the can.

In the operation of the device for crushing the usual type of tin can or container, the can 16 is placed between the upper portions of the jaws, with the open end of the can extending down between the jaws and the bottom or closed end of the can sufficiently above the top of the movable jaw 20 to offer a minimum of interference with the mashing of the open end of the can, and preferably the bead or flange 15 of the can is positioned against one of the shoulders 14 to oppose any upward slipping tendency of the can during the crushing operation. By operation of the handle 28 the movable jaw 20 is then actuated into the successive dotted line positions represented in Figure 4, to mash said open end of the can flat against the inner face of the jaw 12. This partial crushing operation obviously has the result of bending the bottom of the can over at an angle toward the open end of the can, as illustrated by the dotted lines in Figure 4, or in such a position as to facilitate the second operation of completing the crushing of the can. The handle is then operated in the opposite direction to open the jaws and to release the can and allow it to drop down between the lower portions of the jaws, where it will be engaged and retained by the shoulder 36 for the second phase of the crushing operation. This is produced by another operation of the handle to close the jaws, whereby the movable jaw 20 is engaged with the can bottom and completes the bending of it over against the remaining crushed body portion, thus finally crushing the entire can, including the bottom, into a completely flattened state as shown in Figure 6.

The can is thus quickly and effectively reduced to its most compact state, in which condition it is not only adapted to occupy much less space but may be much more easily handled and disposed of as a waste product or for other purposes. Since the material of the can may be readily reclaimed for further use, the present improvement is of potential importance in the promotion of such work of reclamation by facilitating the methods necessary in the first instance for the salvaging of the waste containers.

The feature of the accessory creasing or bending device comprising the block or rib 42 is useful in operation on cans of larger size, for initially bending the body of the can, as well as on containers of heavier stock or construction as to which it may be somewhat more difficult to start the crushing operation without the use of such accessory for that purpose. The provision of this feature is also of value in enabling the operation to be carried out more effectively for the purpose of mashing or crushing bottles or other containers of fragile material. It is also an important aid for mashing cans, such as beer cans, having both top and bottom ends left substantially intact when empty; since by first bending the middle, the can can then be crushed by successively crushing its end portions.

It will therefore be seen that I have devised a practical and highly efficient method and means for carrying out the aforesaid objects of the invention, in connection with which it is of course apparent that the particular form of construction of the operating means is not vitally important, as such may be varied widely within the scope of the invention, the importance of which consists primarily in the improved method of carrying out the crushing operation by mashing first the open end of the container, thereby initiating the crushing of the other end and bending the latter partly over toward the opposite end, and then completing the operating of flattening said partly bent portion down upon the remainder of the container. I therefore desire to reserve the right to make such changes and modifications as may fairly fall within the scope of the appended claims.

Having thus described my invention, what I claim to be new and desire to secure by Letters Patent is:

1. In a device for crushing empty cans, a pair of relatively movable approximately upright jaws for engaging opposite sides of the can, and a transverse rib pivotally mounted on one of said jaws for swinging movement from operative position across the working face of said jaw around to the rear face thereof out of operative position.

2. In a device for crushing empty cans, a crushing jaw materially longer than the can to be crushed and mounted in fixed inclined position, and a movable jaw of a length equal to that of the can to be crushed but substantially shorter than said fixed jaw and mounted for pivotal movement into and out of cooperative crushing relation to only the lower portion of said fixed jaw whereby crushing pressure may be applied first to a portion only of one side of the can while said fixed jaw provides a backing for the full length of the opposite side of the can, and thereafter, on shifting of the can along the fixed jaw, to both of the opposite sides of the can the full length thereof.

3. In a device for crushing empty cans, a crushing jaw of materially greater length than the can to be crushed and mounted in fixed inclined position, a movable jaw of a length equal to that of the cam to be crushed but materially shorter than said fixed jaw and mounted for pivotal movement into and out of cooperative crushing relation to only the lower portion of said fixed jaw whereby the can is afforded a constant backing throughout its entire length by said fixed jaw but is shiftable from a position wherein only a portion of one side thereof is subjected to the crushing action of said movable jaw into a lower position wherein the entire can is embraced between the jaws to complete the crushing action, and a shoulder at the lower end of the fixed jaw for engaging the lower end of the can and supporting the same in its shifted position.

JAMES W. STEELE.