

[54] BEVERAGE CAN COMPRESSOR

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[58] Field of Search 241/99; 100/215, 216, 218,
100/292, 245, 295, 266, 257;

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[57] ABSTRACT

An upstanding abutment wall outwardly from a first side of which a horizontal support extends. A vertical slot extends along the wall and projects at least slightly outwardly from the first side thereof for downwardly receiving therethrough a can extending lengthwise along the first side of the wall and flattened thereagainst. A pressure plate generally paralleling and opposing the first side of the wall is provided and guidingly supported for reciprocation toward and away from the wall for flattening a can thereagainst and the horizontal support includes a pair of bowed leaf springs disposed generally normal to and outwardly of the first side of the wall, supported at their ends remote from the wall and curving upwardly at their ends adjacent the wall for support of an unflattened can therefrom in elevated position relative to the slot, outwardly of which slot the ends of the springs adjacent the slot terminate.

6 Claims, 4 Drawing Figures

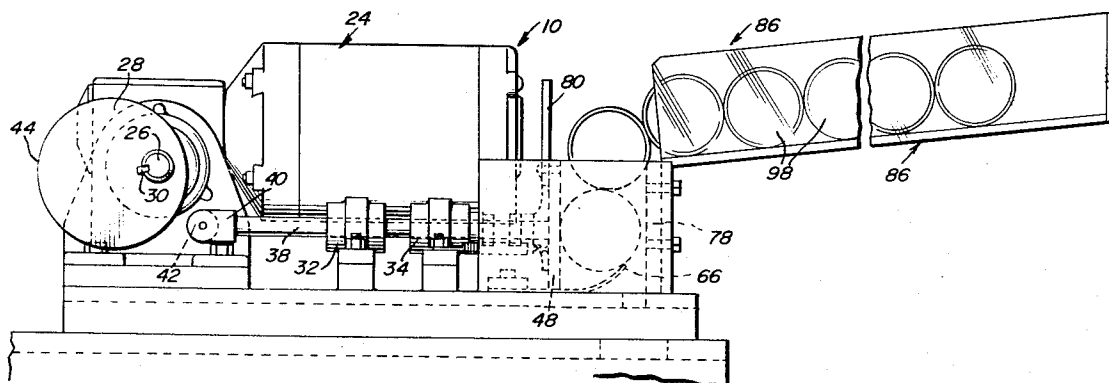


Fig. 1

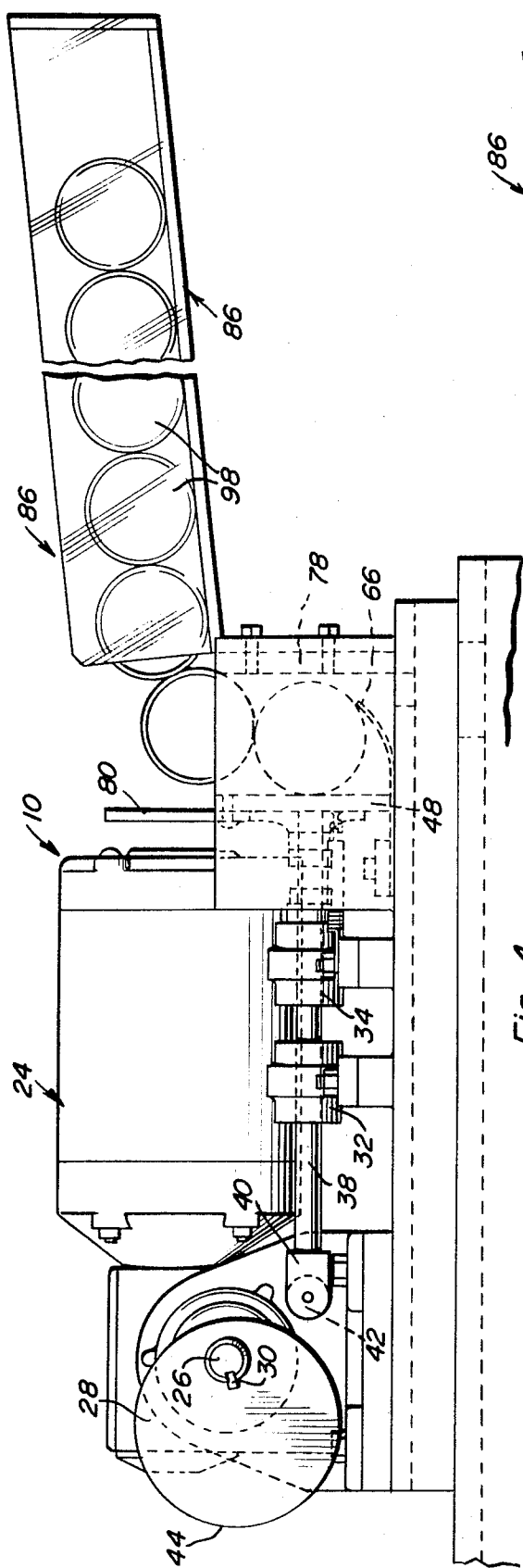
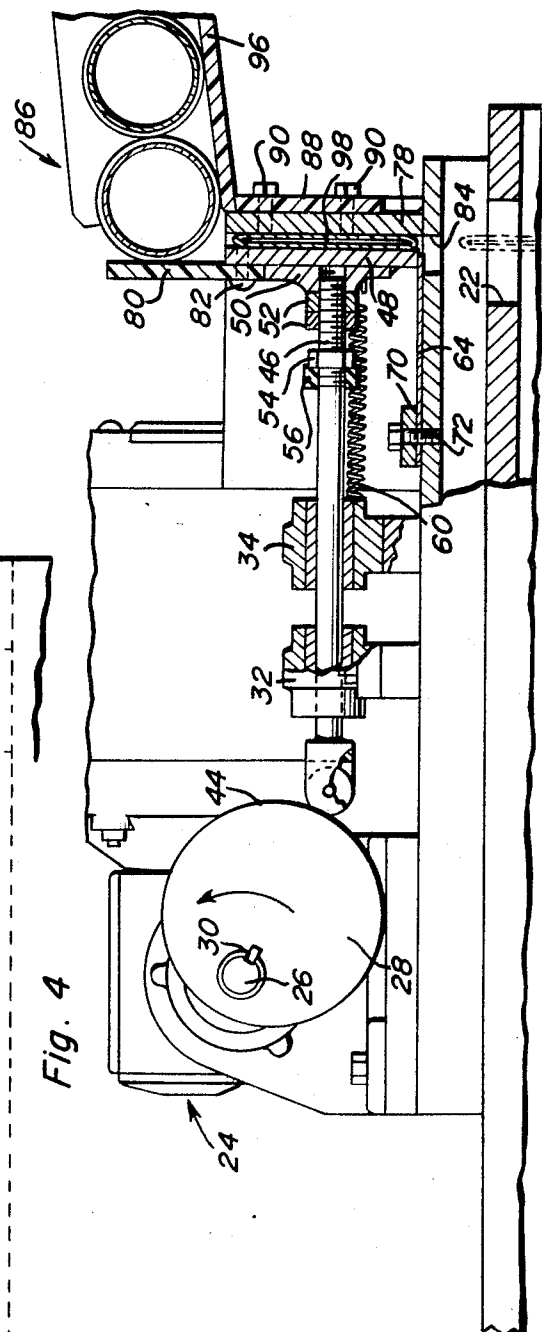
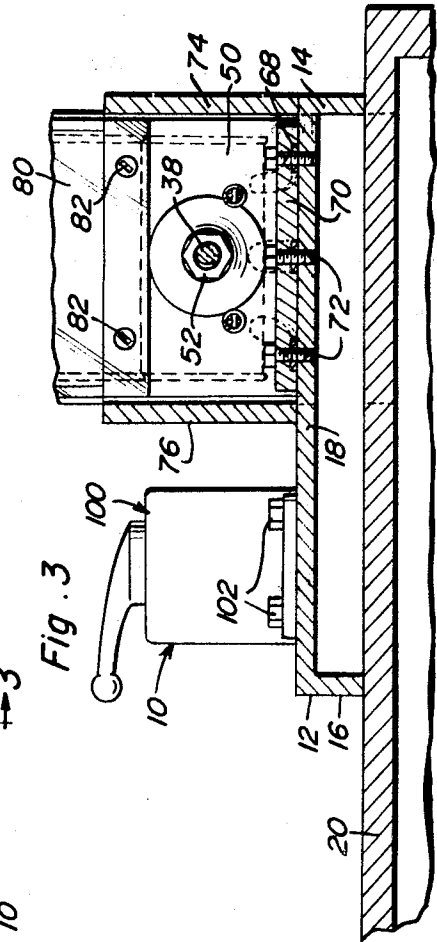
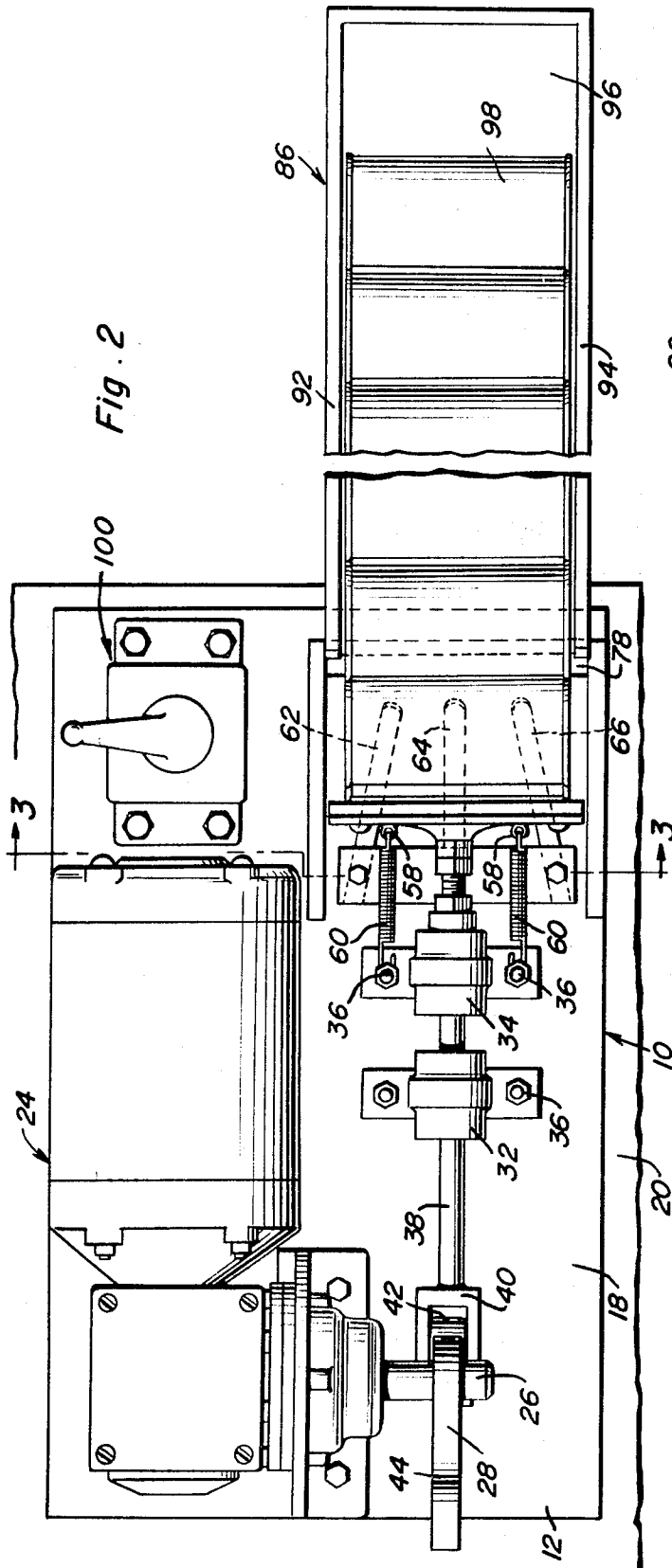


Fig. 4



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BEVERAGE CAN COMPRESSOR

The instant invention has been designed specifically to flatten and therefore compress beverage cans as well as other metallic containers which are used in volume and may be readily flattened.

It has been proposed that for purposes of beautification of areas in which beverage cans are discarded, economical reasons and for the purpose of re-claiming various metals of reasonable value there should be devised some means whereby metallic containers such as those utilized in marketing beverages may be collected after use and reprocessed for subsequent use. Various beverages are marketed in aluminum cans and substantial monetary savings and savings in aluminum could be realized if all aluminum containers or cans in which beverages are marketed could be reclaimed and returned to the manufacturer for reprocessing into new containers.

Accordingly, the main object of this invention is to provide an inexpensive metallic container compressor which could be widely marketed and utilized by various business establishments as well as individuals to compress aluminum cans or containers and the like for subsequent compact shipment back to the manufacturer.

Another object of this invention, in accordance with the immediately preceding object, is to provide a container compressor which may be readily rendered automatic in operation and constructed so as to be operative to receive metallic containers to be compressed in an orderly fashion from a large hopper of discarded metallic containers.

A final object of this invention to be specifically enumerated herein is to provide a metallic container compressor which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a side elevational view of the can compressing machine of the instant invention with a can delivery chute operatively associated therewith;

FIG. 2 is a top plan view of the assemblage illustrated in FIG. 1;

FIG. 3 is a somewhat enlarged vertical sectional view taken substantially upon the plane indicated by section line 3—3 of FIG. 2; and

FIG. 4 is a fragmentary enlarged elevational view of the left hand portion of the assemblage illustrated in FIG. 1 and with portions thereof being broken away and illustrated in vertical section.

Referring now more specifically to the drawings, the numeral 10 generally designates the beverage can compressor of the instant invention. The compressor 10 includes an inverted channel-shaped base 12 consisting of a pair of upstanding parallel flanges 14 and 16 interconnected along their upper marginal edge portions by means of a web or base plate 18 extending therebetween. The base 12 is disposed on any suitable support table 20 having a slot 22 formed therein underlying one end of the base 12.

A gear head motor referred to in general by the reference numeral 24 is supported from the base 12 in any convenient manner and includes a rotary output shaft 26 upon which an eccentric cam disk is mounted. The disk 28 is keyed to the shaft 26 as at 30 for rotation with the shaft and a pair of aligned sleeve bearing blocks 32 and 34 are secured to the web 18 in any convenient manner such as by fasteners 36. The aligned blocks 32 and 34 are aligned with the cam disk 28 and an elongated cylindrical rod 38 is slidingly received through the blocks 32 and 34. The end of the rod 38 adjacent the cam disk 28 includes a bifurcated head portion 40 between whose

furcations a roller 42 is journaled and the roller 42 is rollingly engaged with the outer peripheral surface 44 of the cam disk 28.

The end of the rod 38 remote from the cam disk 28 is externally threaded as at 46 and has a pressure plate 48 mounted thereon. The pressure plate 48 includes a threaded socket mount 50 in which the threaded end of the rod 38 is threadingly engaged and a pair of jam nuts 52 are also threaded on the rod 38 and tightened relative to each other and the mount 50. Also, a further adjusting nut 54 is threaded on the rod 38 on the side of a resilient washer 56 remote from the roller 42. The washer 56 is disposed about the rod 38 and is adapted to engage the opposing surface portions of the sleeve bearing block 34 upon movement of the rod 38 to the left as viewed in FIGS. 2 and 4 of the drawings.

The member 50 includes a pair of anchor eyes 58 disposed on opposite sides of the rod 38 and corresponding ends of a pair of expansion springs 60 are secured to the anchor eyes 58. In addition, the other pair of ends of the expansion spring 60 are anchored to the fasteners 36 utilized to secure the sleeve bearing block 34 to the web 18.

The pressure plate 48 includes a lower edge portion which is spaced slightly above the upper surface of the web 18 and a plurality of arcuate leaf springs 62, 64 and 66 have one set of corresponding ends thereof secured in corresponding notches 68 formed in the undersurface of a retaining bar 70 secured to the web 18 by means of suitable fasteners 72 also passed through the adjacent ends of the leaf springs 62, 64 and 66.

The beverage can compressor 10 further includes a pair of parallel upstanding walls 74 and 76 which are secured to the web 18 in any convenient manner and generally parallel the rod 38. The ends of the walls 74 and 76 remote from the sleeve bearing block 34 is interconnected by means of an end wall 78 secured therebetween and to the web 18. Further, the upper end of the pressure plate 48 includes an abutment flange defining extension 80 which is secured through the pressure plate 48 by means of fasteners 82 and serves a purpose to be hereinafter more fully set forth.

The web 18 includes a vertical slot 84 which is centrally registered with and spaced above the slot 22. In addition, it will be noted that the longitudinal edge portion of the slot 84 remote from the sleeve bearing block 34 is coplanar with the face of the end wall 78 which opposes pressure plate 48.

The lower end of a slightly inclined trough referred to in general by the reference numeral 86 includes a depending support flange 86 which is secured to the outer surface of the end wall 78 by means of suitable fasteners 90. The trough 86 includes upstanding generally parallel sides 92 and 94 interconnected by means of a bottom wall 96 extending therebetween and the trough 86 is adapted to receive a plurality of cylindrical containers or cans 98.

As may best be seen from FIGS. 1 and 2 of the drawings the springs 60 serve to yieldingly bias the rod 38 rearwardly or to the left as viewed in FIGS. 1 and 2 of the drawings. When the pressure plate 48, which is attached to the forward end of the rod 38, is retracted by means of the springs 60, the spacing between the pressure plate 48 and the end wall 78 is such to allow the lowermost can in the trough to roll therefrom and down into the area between the pressure plate 48 and the end wall 78. However, when the pressure plate 48 is retracted, the ends of the leaf springs 62, 64 and 66 adjacent the end wall 78 curve upwardly in the manner illustrated in FIG. 1 of the drawings. Thus, as a can 98 falls into the area between the pressure plate 48 and the end wall 78, the can 98 is supported in elevated position above the web 18.

While the lower portion of the next can 98 in the trough 86 also tends to fall into the upper portion of the area between the pressure plate 48 and the end wall 78, as the cam disk 28 is rotated from the position thereof illustrated in FIG. 1 of the drawings to the position illustrated in FIG. 4 of the drawings and the pressure plate 48 is advanced to the right as viewed in FIG. 4 of the drawings to compress the lowermost can 98, the latter is vertically elongated and the upward projection of the

upper extremities of the can being flattened causes the can 98 disposed thereabove to be elevated back up to a position wherein it may be contacted by the extension 80 and urged backward up the trough 86. Further, inasmuch as the can 98 to be compressed is initially positioned with its lower peripheral portions spaced above the web 18, as the lower portion of the can being compressed is projected downwardly during compression of the can, sufficient clearance is provided without the lower portion of the can being compressed contacting the web 18. Then, as the rod 38 is subsequently retracted to the left as viewed in FIGS. 2 and 4 of the drawings, the compressed can is freed to drop through the slots 84 and 22 into a suitable receptacle.

Of course, the trough 86 may be provided with any suitable form of hopper (not shown) at its upper end for automatically properly positioning cans for reception into the trough 86. Further, it may be seen from FIG. 4 that as the pressure plate is shifted to the right the free upwardly curving ends of the springs 62, 64 and 66 are flexed into flat horizontal positions with the free terminal ends of the springs 62, 64 and 66 underlying the pressure plate 48.

The can compressor 10 includes a switch assembly referred to in general by the reference numeral 100 and the switch assembly 100 may be serially disposed in any suitable circuitry (not shown) electrically connecting the gear head motor 24 to a suitable source of electrical potential. The switch assembly 100 is supported from the web 18 by means of suitable fasteners 102.

The spacing between the end wall 78 and the pressure plate 48 is to be precisely adjusted according to the thickness of a particular type of cans or containers to be compressed by the compressor 10. In this manner, as the pressure plate 48 is moved to the right as viewed in FIG. 4 of the drawings the container being compressed may be fully compressed in order to expel any liquids remaining therein. While in most cases it may not be absolutely necessary to expel all liquids from cans or containers as they are being compressed, in some instances it has been found that aluminum beer cans containing small quantities of beer therein and being reprocessed can sometimes explode. Accordingly, the spacing between the pressure plate 48 and the end wall 78 when the pressure plate 48 is in its extreme right hand position such as that illustrated in FIG. 4 of the drawings may be adjusted to insure that substantially all liquid remaining in cans being compressed will be expelled therefrom.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An upstanding stationary abutment surface, an upstanding pressure plate generally paralleling and opposing said abutment surface and guidingly supported for movement toward and away from the abutment surface, means operatively associated with said pressure plate for alternately shifting said pressure plate toward and away from said abutment surface, means for automatically positioning a container to be compressed between said plate and said abutment surface each time said plate is shifted away from said abutment surface, and means for automatically discharging a container compressed between said pressure plate and abutment surface upon initial movement of said pressure plate away from said abutment surface, a pair of upstanding walls, said pressure plate and abutment surface being disposed in upstanding planes generally normal to said walls, said pressure plate being disposed between the movable along said walls, said abutment surface comprising the surface of an end wall extending between one pair of corresponding ends of the first mentioned walls opposing said pressure plate, a lower wall extending between the lower marginal edge portions of said end wall and

parallel walls, said means for discharging a compressed can comprising a slot formed in said lower wall and extending along and projecting outwardly from the lower marginal edge portion of said abutment surface, said means for automatically positioning a can between said pressure plate and abutment surface including an inclined chute whose lower end is registered with upper portion of the area defined between said pressure plate and abutment surface when said pressure plate is shifted away from said abutment surface, and also retractable spring means including portions thereof disposed between the lower portions of said pressure plate and abutment surface when said pressure plate is retracted away from said abutment surface and operable to support a can disposed between said pressure plate and abutment surface in elevated position above the lower extremities of said pressure plate and abutment surface, said spring portions being disposed to be automatically cammed downwardly by said pressure plate and thus retracted from between said pressure plate and abutment surface upon movement of said pressure plate toward said abutment surface.

2. A stationary horizontal base plate, an upstanding stationary abutment member supported from and projecting upwardly beyond said base plate, said base plate having a narrow slot formed therein extending along one side of said abutment member and downwardly through which a flattened item sliding downwardly along said one side of said abutment member may pass, elongated bowed leaf spring means overlying said base plate on the side of said slot remote from said abutment member and extending lengthwise toward and away from the latter with the end of said leaf spring means remote from said abutment member anchored relative to said base plate and the other free end of said leaf spring means adjacent said slot curving upwardly away from said base plate and terminating a space distance from said abutment member and the remote side of said slot when said spring means is in a substantially horizontal straightened condition, and an upstanding pressure plate opposing said abutment member guidingly supported for movement relative to said base plate toward and away from said abutment member with said pressure plate overlying said leaf spring means and operable to downwardly deflect and thus retract said free end of said leaf spring means upon movement of said pressure plate toward said abutment member, the free end of said leaf spring means, when said pressure plate is retracted away from said abutment member, curving upwardly into the lower portion of the area disposed between said pressure plate and said abutment member for supporting a can to be flattened between said pressure plate and said abutment member in an elevated position above the lower extremity of said area until initial movement of said pressure plate toward said abutment member causes the can to be flattened to be frictionally gripped and thus retained in elevated position above the base plate between the pressure plate and abutment member.

3. The combination of claim 2 including means for automatically positioning a can to be compressed between said pressure plate and said abutment member each time said plate is shifted away from said abutment member.

4. The combination of claim 2 wherein said spring means includes a plurality of individual elongated laterally spaced leaf springs.

5. The combination of claim 2 including a pair of axially spaced and aligned guide sleeves stationarily supported relative to said abutment member, and disposed on the side of said pressure plate remote from said abutment member, a support rod reciprocal through said guide sleeves, the end of said rod adjacent said abutment member having said pressure plate supported therefrom, said means for shifting said plate toward and away from said abutment member including rotary cam means operatively associated with the end of the rod remote from said pressure plate for forcing said rod toward said abutment member, and expansion spring means operatively connected to said pressure plate yieldingly biasing said pressure plate and rod away from said abutment member.

6. The combination of claim 5 wherein said pressure plate is mounted on the end of said rod adjacent said abutment member for adjustable positioning longitudinally of said rod.

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