

Beverage Cans Crusher Machine Patents: A Review:

Part VIII

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Abstract: This study is very useful for inventors to get information about early patents. A review study for patents of CAN crusher machines is presented in this paper within the period between 1981 and 1984. The study covered about forty-eight patents. A summary of each patent is presented in a very brief way. However, details about each patent could be presented in a separate study. This study is the first step for any inventor towards new invention.

Keywords: Patents, Review Study; CAN crusher machines period 1981–1984.

I. A BRIEF SUMMARY of CAN CRUSHERS PATENTS

This study is a part of our review studies for different topics in mechanical engineering approaches, see e.g., [1–48]. The patents of CAN crusher machines is studied and reviewed in several author's early studies, see, e.g., [49–58]. The study here is dedicated for review study within the period from 1981 to 1984, as presented next.

1. CAN compacter, Patent number: 4489649

A CAN compacter gathering including an engine, a liquid direct determined by the engine, a liquid barrel operatively associated with the liquid pump, a cylinder versatile arranged in the liquid chamber, a plunger associated with the cylinder and arranged outside the liquid chamber however slidably inside a plunger slide get together, and a support arranged neighboring the plunger slide get together, the support being adjusted to get a CAN and being additionally adjusted to get the plunger, whereby the plunger is adjusted to practice a compressive power against the CAN to reduce the CAN [59].

2. Aluminum/steel CAN separator and baler, Patent number: 4483248

The reusing machine is furnished with a baling chamber having a cyclable pressure driven slam. The smash cycles constantly, and each time it withdraws, close to a foreordained number of jars are admitted to the baling chamber for pounding and adding to the bundle in that. An including instrument is given and additionally a system for isolating steel jars before baling [60].

3. Apparatus for crushing metal containers and associated method, Patent number: 4483246

Mechanical assembly to crush a majority of metal holders into a unitary compacted unit and the strategy related therewith. A first power worked slam which responds inside a compaction chamber. A supply of jars is brought into the compaction

chamber ideally by a foreordained weight estimation. The entryway between the supply source and the compaction chamber is worked by development of the slam and its related platen. Each successive charge of jars is packed in the compaction chamber until a compacted unit of foreordained size and weight is built up. In another encapsulation miseries might be given to dispose of the need to beds in dealing with gatherings of compacted units. A moveable floor part is opened to allow the compacted unit to be conveyed to a basic release chamber. A second fueled smash moves the compacted unit out of the compactor while ideally, at the same time reestablishing the floor to a shut position [61].

4. Method and apparatus for compacting containers, Patent number: 4475449

A technique for compacting a vacant holder which involves applying a compressive power to the sidewall of the compartment at two indicates generously inverse each other and roughly halfway between the compartment closes accordingly making the sidewall of the holder fall deep down on a plane significantly opposite to the longitudinal pivot of the holder and around halfway between the compartment closes. Endless supply of the compressive power to the holder sidewall, a second compressive power is connected to one end of the compartment while the opposite end is held firm, in this way making the holder sidewall fall along the longitudinal hub of the compartment in order to unite the holder closes. An unfilled compartment compacting gadget is likewise unveiled [62].

5. Aluminum CAN compressor device, Patent number: 4474108

A programmed CAN pressing machine, ideally utilized for packing standard aluminum 12 ounce refreshment jars, is built of a lodging having a precise slanted feed chute for accepting a supply heap of jars to be pounded in that and a contiguous, parallel-masterminded smashing station in which a cylinder responds forward and backward to squash the jars each one in turn conveyed from the feed chute. The feed chute is adjusted to contain a serial pile of spent jars which are arranged, affected by gravity, to pass descending in the chute toward a launch end. An ejector component as a plunger goes transversely through the discharge end of the chute to constrain a CAN going to be smashed through a conveyance opening secured by a fold valve for store into a trough mounted in the devastating station. A devastating cylinder responds inside the trough. Development of the devastating

cylinder along the trough longitudinally packs the CAN to roughly one-eighth of its unique length over an outlet hole [63].

6. *CAN crusher, Patent number: 4463670*

A crusher for articles, for example, aluminum jars, having a devastating chamber with an orientation plate arranged in the base thereof. A launch lever is arranged inside the base of the devastating chamber and is used to incite a crusher cylinder and discharge the squashed article toward the finish of a cycle. In the epitome revealed, the putting of an article inside the devastating chamber withdraws the launch lever against a spring or other mechanical inclination component. This development of the discharge lever at that point impels a change to work the crusher cylinder. The descending activity of the crusher cylinder makes a hook limit the launch lever in its withdrawn position. As the crusher cylinder achieves the most extreme measure of movement, a farthest point switch inverts the drive system and the crusher cylinder moves upward [64].

7. *Aerosol CAN evacuator and compactor, Patent number: 4459906*

Device is accommodated clearing and compacting filled airborne jars. The jars are physically set into a feed chute and detecting implies are given to affirm appropriate CAN introduction and to allow gravity feed of the CAN into a devastating system. A water driven slam pushes the CAN against a stator plate. A punch responds through an opening in the stator plate puncturing the base of the CAN so the substance release into a recipient where the fluid substance are isolated from the propellant and recouped. An air rationale implies controls the sequencing of the agent steps. The contraption CAN be utilized in a hazardous region [65].

8. *CAN crusher, Patent number: 4459905*

A CAN crusher for pivotally squashing a void container of the sort having a recessed best and base and a pour gap in the best, the pour gap showing up when the tab is evacuated to discharge the can. The present development involves first and second individuals having a pivot toward one side for interfacing the individuals in a pivoted design. One of the individuals involves a distension masterminded connecting with the CAN base, ideally by distending into the recessed base of the can. The other part contains a pour gap distension for drawing in the highest point of the CAN by distending into the pour opening. The two projections are situated on the particular individuals so that CAN might be held between the two individuals as the CAN is pivotally pressed by moving the unhinged closures of the individuals toward each other [66].

9. *CAN compactor, Patent number: 4459908*

A compactor for rescuing aluminum jars has a removable upright tube that fits into a score in the base; a replaceable blacksmith's iron has an arcuate space that fits over an area of

the previously mentioned groove, and the tube divider goes through this opening to achieve the furrow. A push bar, bearing a devastating square, is hingedly associated with a lever arm by methods for a U-jolt so it CAN remain generously upright [67].

10. *CAN crusher, Patent number: 4453459*

A mechanical assembly and technique for smashing tube shaped jars is revealed. The mechanical assembly and technique are especially valuable for smashing round and hollow refreshment jars, for example, those ordinarily utilized as compartments for soda pops and brew. The jars are squashed along their longitudinal tomahawks by parallel pounding faces, which each move towards each other along foreordained arcual ways. The countenances are persistently moving along an arcual way with the goal that the faces press the CAN and afterward move far from the CAN to release it from the base of the mechanical assembly [68].

11. *Method and apparatus for sorting, counting and flattening cans, Patent number: 4445430*

A CAN arranging, tallying and straightening machine smoothes void jars by collapsing the CAN body over the rear of the ring or best end of the CAN so both the brand name of the CAN on the CAN body and all distinguishing indicia on the ring end of the CAN are effectively meaningful after the CAN has been totally leveled in a one stage activity by a solitary machine administrator. The machine utilizes a progression of resettable counters which consequently check the aggregate number of each brand of jars, the aggregate number of jars returned per singular client and the aggregate number of jars reprocessed by the machine in a given day and age [69].

12. *CAN crushing machine, Patent number: 4444100*

A mechanical assembly to crush jars embedded into an opening in the lodging thereof. The jars are squashed between a turning drum and a roller rotatably mounted inside the drum. A slide manage implies coordinates the jars into the touch between the roller and drum. Pounded jars drop through an opening into a gathering bin [70].

13. *CAN crushing apparatus, Patent number: 4442768*

A strategy for and mechanical assembly to crush jars, for example, aluminum jars, for encouraged further taking care of. The mechanical assembly is adjusted for pounding the CAN longitudinally to a halfway smashed arrangement characterized by a fallen round and hollow sidewall, a base divider stretching out significantly oppositely to the pivot of the sidewall, and a best divider reaching out at an intense point to the hub. The mechanical assembly is additionally organized to allow controlling the halfway smashed CAN to an alternate attitude wherein the mostly squashed CAN is pressed to a last setup characterized by a further fallen round and hollow sidewall thereof, a base divider stretching out considerably oppositely to the pivot of the further crumbled

sidewall, and a best divider conversely repositioned at a dislodging edge to the first intense point of the in part pounded CAN [71].

14. System and method for selecting and segregating containers, Patent number: 4443697

A novel framework and a strategy are accommodated choosing and isolating utilized, deformable compartments having an UPC assignment engraved subsequently. The framework is client worked, client controlled, and straightforwardly sustained, individually. The framework ideally incorporates implies for compacting and inside putting away the compartments subsequent to compacting [72].

15. Empty CAN crusher, Patent number: 4436026

A void CAN crusher for smashing and straightening void jars, involving a bay, a chute, a plug gadget, a squeezing gadget and a forked chute. Void jars provided in the crusher are squashed and straightened by the squeezing gadget and are arranged into aluminum jars and steel jars by methods for a magnet inserted in the squeezing gadget, which tumble down into individual repositories through the forked chute [73].

16. CAN flattener, Patent number: 4432279

A flattener for refreshment jars is unveiled. The flattener includes a pivoting drum and a progression of roller gatherings mounted in a meeting bend as for the drum to give a dynamically diminishing nip between the roller congregations and the drum between which the jars might be smoothed [74].

17. CAN crushing apparatus, Patent number: 4432278

CAN smashing contraption wherein commonly precise arranged curved and level funnel shaped plates are turned to characterize an open, wedge-formed getting district which dynamically reduces about a round locus to a leave position of close nearness of the surfaces. Jars are brought into the getting district whereupon they are dynamically longitudinally straightened, accordingly encouraging the removal of any fluids staying inside the jars while doing leveling. By presenting jars from an upwardly arranged trough structure, characteristic security is accomplished with the end goal that the administrator can't venture into the devastating parts of the contraption. The slant of the circle part captivating surfaces ideally is around 9-degree, while the included edge there between at the getting area ideally is around 33-degree. By working the plates at around 60 rpm, enhanced quiet task is accomplished [75].

18. Method and apparatus for separating a lid from a container, Patent number: 4418460

A multi-metal compartment isolating mechanical assembly is accommodated situating, delidding and compacting holders. The device incorporates an arranging unit which situates the covers of the compartments a foreordained way. After introduction, the holders are nourished to a delidding unit. The

delidding unit incorporates a cinching get together to grip every compartment amid the delidding procedure in which one end is expelled from every holder. While every compartment is held settled in position, a puncturing component is stretched out from inside a moving plunger body to enter a finish of the holder. The penetrating component is then withdrawn inside the plunger body. Development of the plunger body proceeds through the body of the compartment and the plunger body connects with the opposite end of the holder. The power of the plunger body toward a path deep down to apparently of the compartment evacuates this finish of the holder. The delidded holder tumbles to a pivotable help stage [76].

19. Bottle saw system, Patent number: 4418594

A recover framework for plastic containers whereby the jugs are held between moving belts and the debased segment sawed from the uncontaminated bit, along these lines allowing appropriate recover of the particular parts [77].

20. CAN crusher, Patent number: 4417512

An enhanced CAN squashing gadget intended to pound jars, for example, aluminum refreshment compartments for reusing purposes contains a vertically responding plunger 60, the faceplate 68 of which acts in conjunction with a hoisted CAN stage 26, mounted on an essential segment 10 to apply drive at the best and base of the CAN 100 to effectuate the devastating procedure. A handlebar 62 connected at the best and a footbar 82 appended at the base of the plunger gathering 60 gives a way to the administrator all the while to apply drive from arm and leg muscles and body weight to press the can. A silencer 16 is incorporated with the essential section to allow the administrator to pick up and amplify the utilization of force at the first and at the last phases of the devastating procedure and to retain the unexpected decrease of descending development at the last phase of the devastating procedure. An arrival spring 28 holds the gadget at its completely broadened tallness with the exception of amid the devastating procedure [78].

21. Crushing apparatus, Patent number: 4414891

A devastating device adjusted for smashing jars and so forth has a cylinder gathering equal inside a tube shaped lodging. The cylinder get together incorporates a cylinder head and a drive bar which is given a majority of rigging teeth. The rigging teeth of the drive bar are locked in by a round apparatus mounted on a pole situated transversely in the lodging with the pole being rotatable by methods for a wrench arm to respond the cylinder gathering in the lodging. An end divider anchored to the lodging characterizes a settled pounding surface while the cylinder head gives a portable squashing surface. An augmented section opening is given in the lodging to allow inclusion of a CAN to be pounded between the settled and portable smashing surfaces with the cylinder head being versatile totally past this opening. A leave opening is additionally given in the lodging, ideally at a rakishly separated introduction to the passage opening with

the leave opening allowing the evacuation of the CAN after it has been pressed [79].

22. *CAN crushing device, Patent number: 4403545*

A CAN crusher for smoothing tube shaped jars, for example, soda pop and brew jars made of aluminum. The crusher is intended to get a majority of jars, one over the other. The crusher pleats the jars before collapsing and leveling the best and base of the CAN against the sides of the can. The crusher is worked by raising and bringing down a handle and the jars are straightened as quick as the jars CAN be stacked into the highest point of the crusher [80].

23. *Machine for converting returnable CANS into metal ingots, Patent number: 4398456*

A machine for diminishing, smashing, and joining utilized metal jars to frame an ingot involving a pile of overlaid pressed jars. The diminishing chamber contains a vertically movable platen on which the ingot is framed. The jars are diminished, squashed, and joined by a smash which is worked inside the chamber. Punches on the slam are viable to puncture expelled gaps in the squashed jars after the jars have been smoothed. The smash is controlled using pressurized water, or by some other weight delivering gadget, by means of a flip with the goal that an expanding pressure compel is created as the jars are squashed [81].

24. *CAN crusher, Patent number: 4394834*

A CAN crusher having ceaseless incremental pounding activity for diminishing jars or comparable compartments to a smaller size is revealed. The crusher comprises of a lodging having a round and hollow arrangement with a tube shaped pit arranged in that encased toward one side by a mounting installation for level connection to a divider or something like that and encased at the opposite end by a front fitting which gives a devastating surface. Arranged inside the round and hollow cavity is a slam slidably engageable in that having ratchet arms appended in a separated relationship thereto adjusted for connection to a handle for pushing the smash through the cavity in a constant incremental way toward the front fitting. The lodging incorporates a CAN inclusion opening arranged in a best segment thereof to enable a CAN to be embedded into the pit between the slam and the attachment and a would ejection be able to space arranged in the base part thereof proximate the front fitting for passing a CAN which has been pounded out of the lodging [82].

25. *Aluminum CAN compactor, Patent number: 4393765*

This compactor gadget is for smashing jars, in order to empower them to be put away in a littler space than when they are in their typical measurements, and it comprises essentially of a base plate with a couple of legs joined. The legs incorporate a container divide, in which one end of an aluminum CAN is set, and a handle is anchored by a pivot to the base plate, and is utilized to smaller the CAN by manual weight of the client's hands [83].

26. *Container crushing device, Patent number: 4387637*

A gadget for squashing compartments exemplifies a base having a supporting surface for getting the holder to be pressed. Upstanding pressing individuals are mounted for rectilinear development along the supporting surface specifically to a first position in divided connection to each other for getting the compartment to be smashed and to a second position with the devastating individuals being compared in respect to each other to pound the holder. Stretched power transmitting individuals are associated with the devastating individuals and are mounted for sliding development along the supporting surface. A power transmitting component is mounted for revolution over each power transmitting part and confers rectilinear development thereto and to the devastating individuals conveyed subsequently specifically to their first and second positions [84].

27. *CAN crimping and folding device, Patent number: 4383480*

A CAN creasing and collapsing gadget is indicated which has a base plate having a pleating zone and a collapsing zone. The territories are adjusted to successively get a can, the length of which is transversely lined up with the longitudinal pivot of the base plate. A pivotable handle is joined toward one side of the base plate and turns toward and far from the base plate. The handle has a two-position CAN pleating segment adjusted to meet the base creasing territory and a CAN collapsing segment adjusted to meet the base collapsing zone. The CAN collapsing part of the handle has twofold inward discouragements in that to build the mechanical preferred standpoint of the gadget [85].

28. *Crusher and separator for CANS and bottles, Patent number: 4373435*

A CAN and bottle crusher and separator with stationary and wavering tooth jaw plates going up against each other and merging with each other a descending way and dropping squashed glass and metal holders into the release chute. A glass releasing port in the base of the release chute coordinates glass particles straightforwardly into a gathering barrel. An entryway is given to on the other hand close the chute or to close the glass release port. The chute has an isolating wheel at its base end to at first stop and after that move aluminum jars absurd of it. The wheel has attractive belts to bear steel holders with the wheel until the point when they are peeled off and dropped into a suitable barrel [86].

29. *CAN folding and flattening device, Patent number: 4369699*

A turning power vector is connected to the sidewall of a CAN at an adequate separation expelled from the finish of that CAN to allow the simple bending of that sidewall and the prepared revolution of the can-end toward a plane which lies basically parallel to the round and hollow pivot of the can. Means are given to additionally mutilate the CAN and, during

that time use of a turning power vector, to pivot the second end of the CAN into a plane basically parallel with the barrel shaped hub of the can. Leveling implies connected to the CAN after every unrest of a can-end has a tendency to bring the planes into which the can-closes lie into close juxtaposition in order to give a generally level bundle requiring relatively little storage room when contrasted with the measure of room required to store the first undistorted CAN [87].

30. CAN flattener, Patent number: 4358994

A mechanical assembly to level a compartment, for example, a CAN utilized in the soda pop or brew industry. The mechanical assembly is so composed in order to at first curve the CAN down the middle and following the bowing of the CAN fifty-fifty, the CAN is then smoothed or compacted to exhibit a generally thin cover. The mechanical assembly is intended to work in a planned arrangement of activity of in this way impact the twisting of the CAN and along these lines level the same [88].

31. Apparatus for crushing articles, Patent number: 4358995

A contraption for smashing articles, for example, aluminum drink jars. The devastating mechanical assembly includes a rotatable, polygonal-molded drum having sharp edges mounted on every level external surface of the drum which venture apparently past the particular surface. The articles to be squashed are brought into the territory between the drum and a spring-stacked weight plate, and on turn of the drum, the cutting edges connect with the articles and move them into the touch between the drum and weight plate to pound and level the articles. The device additionally incorporates a snappy discharge component in which the weight plate CAN be promptly discharged to remedy a sticking circumstance [89].

32. Portable CAN crushing apparatus., Patent number: 4345520

A convenient CAN squashing device which is ideally likewise promptly mountable to a flat or vertical help surface is unveiled in this. This device incorporates a couple of dispersed poles and a front end plate which together serve to help a CAN to be squashed. A back end plate is additionally given and serves to help rearward finishes of the poles and furthermore the front edge of a holding plate which goes about as a footstool amid the CAN squashing activity. This last task is done by methods for a press plate mounted for slidable development along the bars and a handle course of action arranged between and associated with the squash plate and the back end plate [90].

33. Container collection apparatus with electromagnetic sensor and method, Patent number: 4345679

Mechanical assembly for gathering of metallic compartments and for apportioning tokens therefor, including an outside lodging having an entrance port in that, a turning belt having a majority of by and large opposite racks framed subsequently,

every rack for accepting and supporting a holder, a look curl for presenting the compartment to an electromagnetic field for recognizing a particular foreordained metallic organization, an allocator for specifically administering a token for a got compartment having the foreordained metallic arrangement, a crusher coordinating with the pivoting belt for squashing the compartment, and a container for putting away the pressed holders [91].

34. Vertical CAN crusher, Patent number: 4345519

A vertical CAN crusher of the sort having a vertical standard conveying a cantilever head supporting a vertically mobile smashing ram, and means for vertically impelling the slam reciprocatably in respect to an upwardly confronting worktable generously separated beneath the head and settled in respect to the standard, and containing a vertical tubular CAN repository having its lower end distinctly bolstered on the work table and having its upper end open to get a CAN in that and adjusted to get the slam for squashing the CAN against the worktable. Level means joined to the container and guided by the standard controls the repository for development with respect to the standard and the head between a first position operatively adjusted under the slam so that a CAN put in the repository is adjusted to be pounded by the smash into a smoothed plate, and a second position adjusted for releasing the pressed CAN circle from the container [92].

35. CAN crusher, Patent number: 4345518

An enhanced CAN crusher which has a couple of vital arms receptive to the situation of a cylinder inside an extended, base mounted tube for scratching or wrinkling and penetrating the side of the CAN preceding the devastating the CAN by the cylinder. The cylinder is initiated with a pivotable handle which draws in the cylinder through gaps in the tube. The turn arms are mounted to the outside of the tube and their finishes remote from the base are one-sided toward the pivot of the tube into commitment with the side of the cylinder. As the cylinder moves towards the can, the projecting parts of the upper finishes of the turn arms are constrained far from the pivot of the tube in this way compelling jutting bits on the lower closures of the arms into the side of the can, in this manner penetrating and gouging the can. As the cylinder smashes the can, the lower distending segment is turned far from the CAN by the activity of a biasing spring. The finish of the significant handle CAN be bended to decrease off-hub powers on the cylinder [93].

36. CAN crusher, Patent number: 4334469

A contraption for pounding tin jars for advantageous transfer, the mechanical assembly incorporating a fenced in area fitted with an entryway for setting jars in that, a wrench worked weight plate inside the walled in area for squeezing descending against the jars and a ventured tapered seat whereupon jars are put so to not slip amid pressing activity [94].

37. *Two-stage CAN crusher, Patent number: 4333396*

A contraption is revealed for a two-arrange smashing of void jars along their longitudinal tomahawks to crumple them to least mass. The mechanical assembly has a stanchion settled to a base as well as the extended/dumpy lever arms via stanchion. A linkage interconnects the extended lever arm into the dumpy one. Primarily and secondly smash heads are significantly fixed between the base and the extended/dumpy lever arms with a pantograph compose linkage to control the mentality of the squash heads. In the primary phase of pounding, the CAN is put between the first of the press heads and the base, and the long lever arm is pushed toward the base to somewhat press the CAN pivotally. In the second stage, the incompletely crumbled CAN is set between the base and the second squash head. The long lever arm is advanced toward the base subsequently moving the short lever arm toward the base and the CAN is along these lines totally pivotally smashed [95].

38. *CAN flattening device, Patent number: 4333397*

A gadget is uncovered for independently smoothing barrel shaped holders, for example, metal jars. A base is accommodated supporting a CAN in a devastating position in which the CAN is arranged on its side on the base. A lever instrument is vitally connected to the base and is swingable upwardly in this manner to a raised position to allow a CAN to be situated on its side on the base and downwardly toward the base for squashing the situated can. The lever component is jointed and incorporates a CAN connecting with edge anticipating from the joint whereby the edge is pivotable both about the rotate hub of the lever instrument on the base and about the joint to impact smashing of one side of the CAN toward one side thereof with the one end smoothed over the squashed side. The in part leveled CAN then is turned over for correspondingly straightening the opposite side and opposite end thereof until the CAN is totally pressed into a smoothed condition [96].

39. *Container crushing device, Patent number: 4333395*

A gadget for pounding metal holders to encourage reusing the compartments, the gadget having a base and a working lever critically anchored to the base. The base has a base shoe measured to get one end of a metal holder and the working lever has a devastating shoe toward one side thereof. The devastating shoe has an annular score framed in one face and estimated to get the opposite end of the metal compartment [97].

40. *CAN crushing apparatus, Patent number: 4326457*

CAN squashing device including a base bit, a CAN holding segment, a crusher partition, and a crusher inciting segment; the CAN holding segment broadening upwardly from the base segment, the CAN holding segment including a CAN holding segment, the CAN holding area including a CAN accepting opening neighboring the upper end of the CAN holding segment, a pressed CAN outlet opening adjoining the lower

end of the CAN holding segment; the crusher divide including a cylinder, a cylinder pole having one end associated with the cylinder and the contrary end thereof associated with the crusher impelling bit, the cylinder pole being of a length more noteworthy than the length of the CAN holding segment; the crusher activating bit including a help segment expanding upwardly from the base segment contiguous the CAN holding segment, a handle part having one end thereof urgently associated with the upper end of the help segment and reaching out from the help segment over the upper end of the CAN holding segment [98].

41. *Apparatus for collection of metallic containers and method therefore, Patent number: 4324325*

Contraption for accumulation of metallic holders and for apportioning tokens in this way, including an outside lodging having an entrance port in that; a pivoting belt having a majority of by and large level racks framed subsequently, every rack for getting and supporting a compartment, a couple of bended actuator arms for passing an electric current straightforwardly through the compartment for recognizing a particular foreordained metallic piece, an allocator for specifically administering a token for a got compartment having the foreordained metallic organization, a crusher collaborating with the turning belt for squashing the holder, and a container for putting away the pressed compartments [99].

42. *Article crushing device, Patent number: 4323009*

An article pressing gadget having a construct bolster with respect to which is mounted a blacksmith's iron section for supporting the thing to be squashed incorporates a devastating cylinder arranged in a round and hollow lodging which is adjusted to slidably move in that. A working handle, vitally associated with the base help, is furnished with a methods interfacing the working handle to the cylinder for logically expanding the proportion of power on the cylinder to minute on the working handle as the cylinder approaches the blacksmith's iron section amid the devastating task of the article [100].

43. *Compact CAN crusher, Patent number: 4316410*

A reduced CAN crusher in which utilized drink jars and such are dropped into a chute and are squashed level between a wavering crusher plate and a mass of the chute, the pounded jars being dropped through an open lower end of the chute. A drive engine is coupled to the crusher plate to apply greatest push at inverse finishes of the wavering stroke, with the goal that jars are viably leveled to a base thickness. In one shape spring put away vitality adds to the underlying smashing activity when the most weight is required, and arrangement is made to keep jars from sticking in the chute and to keep the system from being stuck by articles which are not promptly pounded [101].

44. CAN crusher, Patent number: 4301722

A compacting gadget for pressing aluminum refreshment holders to render them all the more promptly storable and transportable to rescue offices. The gadget involves a lodging with a side opening for getting a vacant holder, an open end lined up with a mobile cylinder activated by a linkage controlled by a hand lever, and a shut end supporting a vital blacksmith's iron. The CAN is at first pleated as it is embedded through a limited bit of the side opening to help begin its hub pounding when connected by the cylinder. At the point when the CAN is completely fell, the blacksmith's iron turns to launch the CAN from a lower opening in the lodging. The gadget is ideally developed from a solid, light, plastic material and CAN be mounted in either a vertical or even position [102].

45. CAN crusher, Patent number: 4296683

A CAN crusher having a lodging, a container removably upheld on the lodging for holding jars to be pressed, a perplex anchored inside the container gravitationally underpins jars consequently and grants plunge of the jars into the base of the container whereby said jars drop into and rest upon a CAN support joined to a slam, a drive sprocket stretching out from an engine is associated with a sprocket wheel whereby the sprocket wheel turns after turning of the drive sprocket, a smash associated with the sprocket wheel rotates on a slam bolster and responds inside guide implies on said smash bolster after turning of the sprocket wheel, a CAN drawing in plate connected to the smash propels toward a CAN drawing in plate appended to the slam bolster, a CAN upheld on the CAN support is pounded between the plates as the slam progresses with the sprocket wheel, the squashed CAN drops by gravity through an opening in the base of the lodging upon the arrival stroke of the smash [103].

46. Aluminum CAN crusher, Patent number: 4292891

A CAN crusher is given using a solitary lever arm rotated in two spots to a vital connection and a crusher plate individually and having an interesting activity wherein after lifting the lever arm space is accommodated a CAN and a foot reached out from the lever arm smashes one end of the can, and after discouraging the arm the CAN is totally pounded [104].

47. Method and apparatus for folding and crushing empty cylindrical cans, Patent number: 4291618

A mechanical assembly and technique for collapsing and squashing void barrel shaped jars with the end goal that in the wake of being collapsed and smashed the CAN end faces are basically coplanar. The device includes a level stationary iron block and a level parallel reciprocable platen characterizing there between a collapsing compartment into which a void CAN is embedded, a freely reciprocable wrinkling component or plunger slidably embedded in an opening through the focal point of the reciprocable platen, for example, to enter and leave said collapsing compartment, and a drive game plan all the while propelling the reciprocable platen and reciprocable

wrinkling component into said collapsing compartment towards the can, the wrinkling component being propelled more quickly than or in front of the platen, and drive withdrawing the wrinkling component after the wrinkling component has almost gone through the CAN without halting the progress of the platen, and in this way withdrawing the platen [105].

48. Container redemption apparatus and process, Patent number: 4285426

A recovery mechanical assembly or framework and process for tolerating the arrival of chose sorts of non-refillable holders, and issuing to the client a money return or a coupon redeemable at a store for the face esteem printed subsequently. In one encapsulation of the innovation the reclamation framework incorporates an open round merry go round turntable having circumferentially isolated compartments subsequently in which a client puts a returned bottle or can. The returned holder is set on the merry go round with a code subsequently, which might be of UPC compose, confronting radially apparently along these lines to such an extent that turn of the merry go round outcomes in development of the code past inside the recovery device, which checks and recognizes the code markings [106].

II. SUMMARY AND CONCLUSIONS

One of the necessity for any inventor is to study all previous inventions in the same interested field; this is the first step for inventors to avoid repetition of existed inventions. In view of that, this study presents an overview of the previous inventions for CAN crusher machines. Since there are many inventions for such machines around the world, we present in this study the inventions from the year 1981 to 1984, i.e. about half a decade; we already covered other duration periods in the early papers. The study presents a summary of the CAN crusher inventions in a simplified manner via about 108 inventions. Early invention by the author is already presented.

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