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Bochmann

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[54] **CAN CRUSHER**

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[52] **U.S. Cl.** **100/236;** 100/264; 100/DIG. 2

[51] **Int. Cl.**..... **B30b 7/00**

[58] **Field of Search** 100/233, 234, 264, 236, 100/DIG. 2; 241/99; 269/237, 287, 152, 153; 99/581

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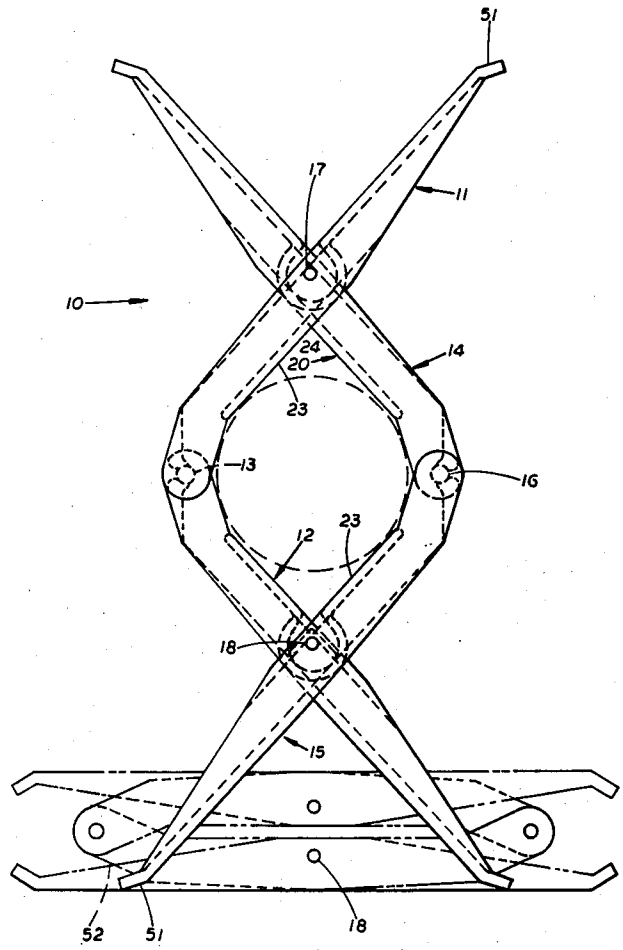
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[57] **ABSTRACT**

Apparatus including two pairs of lever arms pivotally engaged at the ends of the individual lever arms and each lever arm having a pressure transmitting end section. Other means pivotally engage corresponding midportions of the individual lever arms to secure the pairs of lever arms together to form a compression enclosure from criss-crossed lever end sections adjacent the pivotal connections of the pairs of lever arms.

10 Claims, 7 Drawing Figures



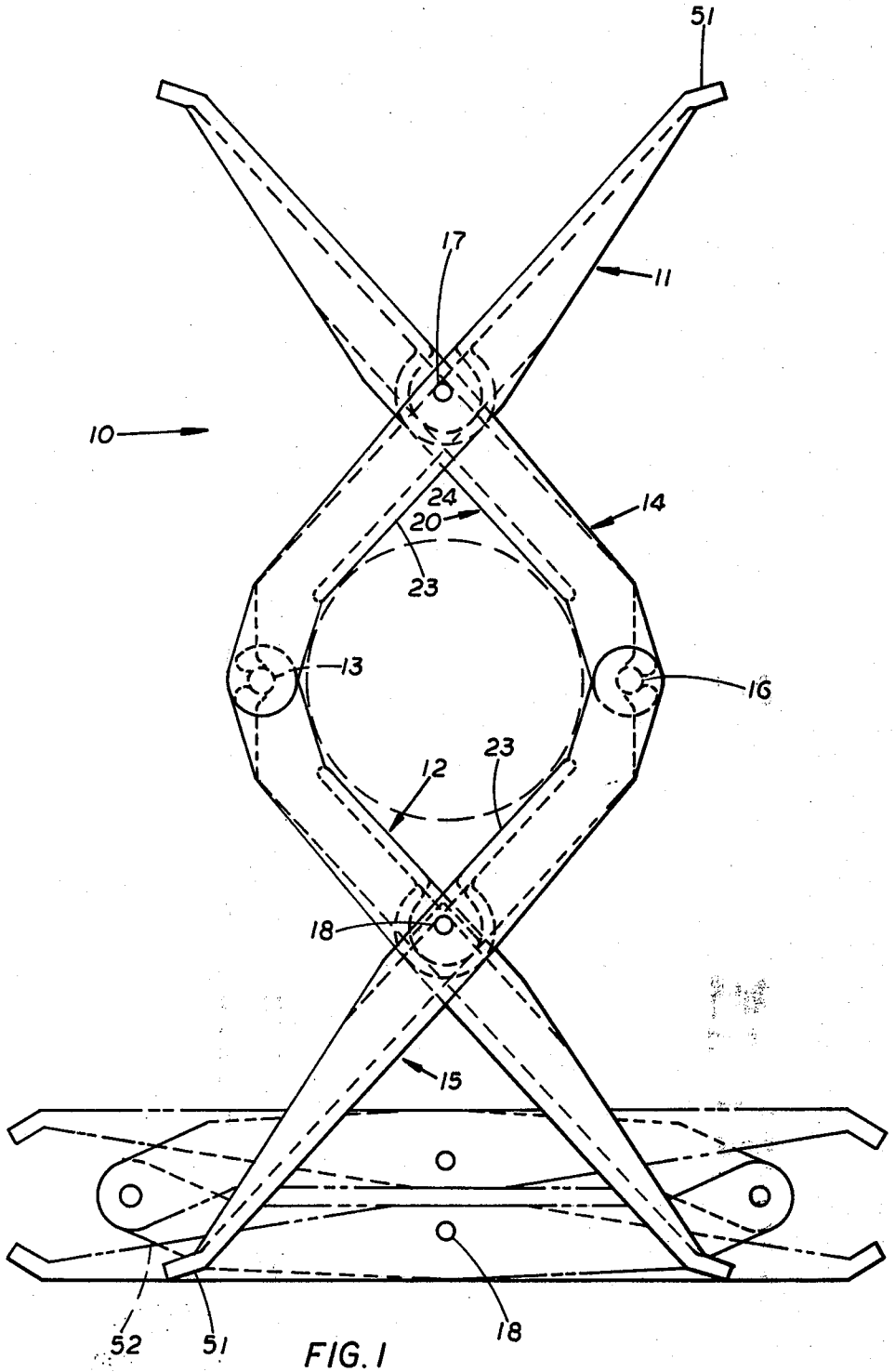


FIG. 1

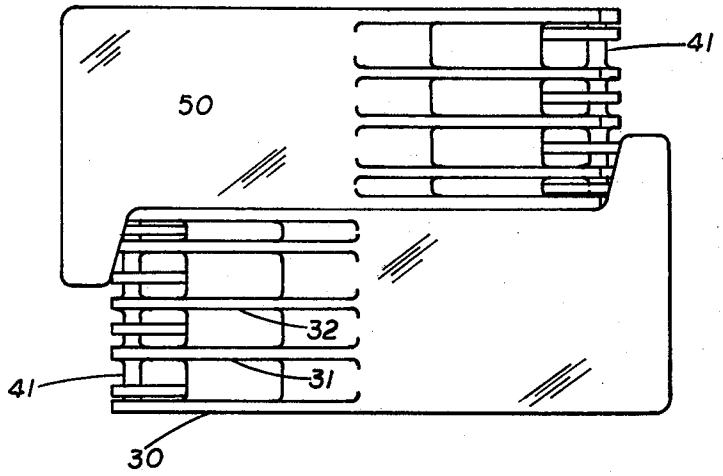


FIG. 2

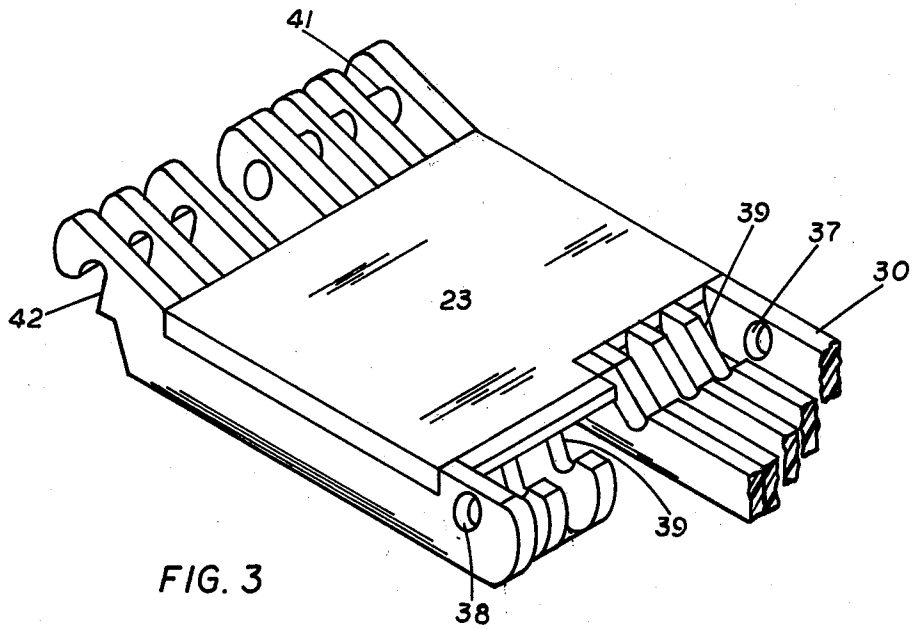


FIG. 3

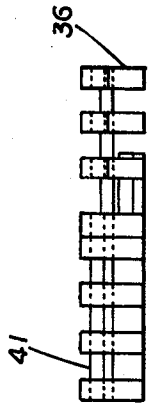


FIG. 7

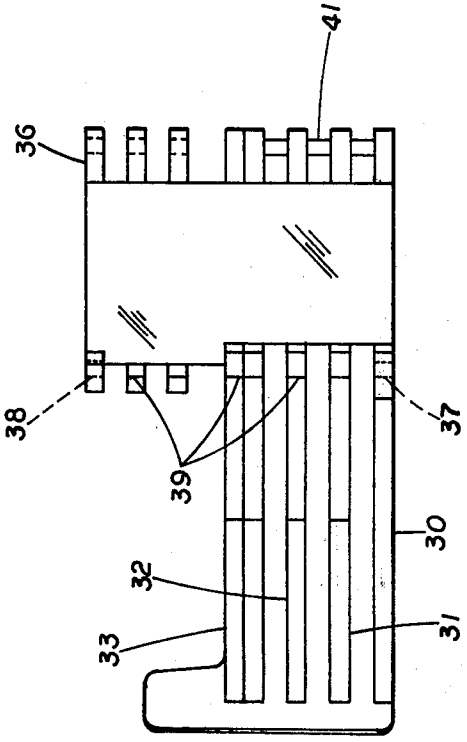


FIG. 6

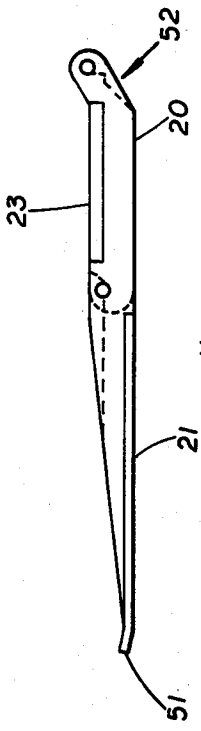


FIG. 5

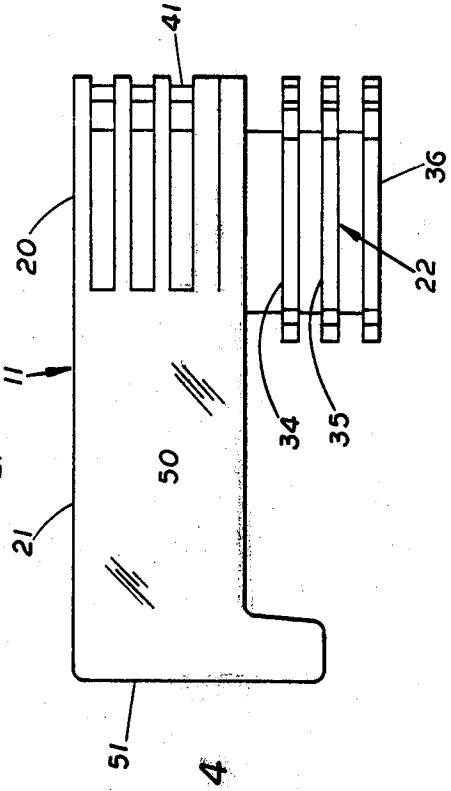


FIG. 4

CAN CRUSHER

BACKGROUND OF INVENTION

At the present time more and more importance is being attached to the conservation of the natural resources and other products of our country. Specifically, the metal used in household containers such as cans can be recycled and reused. More efforts are being made continually to pick up and reprocess the metal in cans after having been used by the homeowner. It is somewhat difficult to store these cans and to process them for storage and shipment in compact fashions. Sometimes one can manually crush a can after having removed both ends thereof but this is unpleasant and rather dangerous action that may be objectionable, and some women cannot crush cans manually or do not wish to bother to do so.

The general object of the present invention is to provide a novel and improved, attractive can crushing apparatus, characterized by production of the crusher from sturdy molded plastic parts providing a relatively easily used crusher device for use with cans and other articles for applying a manually applied crushing or compacting pressure thereto.

Another object of the invention is to provide a can crushing device from four identical lever arms made from molded plastic materials whereby the production, assembly and use of the can crusher is facilitated and the costs therefore are reduced.

Another object of the invention is to provide a compact can crushing apparatus that can be stored on a counter shelf, which crusher is readily cleaned, which crusher will easily and safely crush a can to a flattened condition by relatively lightly applied manual pressures to the crushing device, and which is made from two pairs of pivotally engaged lever arms operatively assembled in criss-crossed relation.

Other objects will be made apparent from the following description.

Reference now is made to the drawings, wherein:

FIG. 1 is a front elevation of the article of the invention with the compressed operative position of the apparatus being indicated in dotted lines;

FIG. 2 is a top plan of the compressor of FIG. 1;

FIG. 3 is a fragmentary enlarged perspective view, partially broken away and shown in section, of one arm or lever of the compressor of FIG. 1;

FIG. 4 is a top plan of one lever arm of the compressor of FIG. 1;

FIG. 5 is a side elevation of the lever arm of FIG. 4.

FIG. 6 is a bottom plan of the lever arm of FIG. 4; and

FIG. 7 is an elevation of the lever or arm of FIG. 4.

When referring to corresponding members as shown in the drawing and described in the specification, corresponding numerals are used to facilitate comparison there-between.

SUBJECT MATTER OF THE INVENTION

The can crusher includes two pair of lever arms pivotally engaged at the ends thereof and with each lever arm having a pressure transmitting end section, means pivotally engaging corresponding axially inner ends of the said end sections of the individual lever arms of both of the pairs of the lever arms to secure them together in criss-crossed relation and form an operative four lever arm unit that has a compression enclosure

provided by the lever arm end sections. Each lever arm has a pressure applying end section, the pressure transmitting end section is about twice the width of the pressure applying end section, and each lever arm including a flat pressure compression transmitting inner surface when operatively assembled; and the compression enclosure being formed by the compression surfaces on the four lever arms.

The invention also relates to the particular fulcrum means provided in the can crusher and how the four lever arms are operatively engaged by the fulcrum means to provide an easily assembled can crusher adapted for transmission and provision of article crushing or compacting forces by the crusher apparatus.

With reference to the details of the apparatus shown on the drawings, a can crusher or the like is indicated as the whole by the numeral **10.** The can crusher **10** is formed from a pair of left lever arms **11** and **12** secured in the pivotal engagement with each other by a fulcrum means or shaft **13** and by a pair of right side lever arms **14** and **15** secured in pivotal engagement with each other by a fulcrum means or shaft **16.** Additionally, the can crusher has the pairs of lever arms operatively engaged with each other in criss-crossed relation by pivotal or fulcrum means **17** and **18** intermediate the ends of the two lever arms of each pair. Corresponding portions of the lever arms are engaged by such means **17** and **18.**

It is a feature of the invention that to facilitate engagement of the lever arms and formation of the same, preferably these lever arms **11, 12, 14** and **15,** are all of the same shape and are made from a molded plastic material of any known nature, such as a polycarbonate or other conventional molding resin. The fulcrum means **13, 16, 17** and **18** can be removably or permanently engaged with the lever arms.

The individual features of one lever arm **11** are shown in FIGS. **4** through **7,** and each lever arm includes a pressure transmitting end section **20** and the handle or pressure applying end section **21** at the opposite end of the individual lever. The drawings clearly show that the pressure transmitting end section **20** is substantially twice the width of the pressure handle or applying section **21** and consequently has a portion **22** offset act laterally from axial alignment with the pressure handle section. This pressure transmitting section includes a flat pressure applying inner surface **23** which is adapted to be positioned on the inside of the criss-cross lever assemble of the can crusher **10** and with the four levers being so correlated and positioned so that a compaction enclosure **24** is formed from the pressure transmitting sections **20** of the four levers when operatively associated as shown in FIG. **1.** Hence an article to be compacted or crushed, such as a tin can or like article, can be placed in this enclosure when the levers are put into their open or separated positions and are then manually moved down into the compaction position, as indicated in dotted lines in FIG. **1** to flatten the can. If desired, the cans or other articles to be crushed can have one or both ends cut therefrom prior to positioning the can in the compaction enclosure. Normally the can would be positioned in the enclosure as indicated in dotted lines in FIG. **1** with its longitudinal axis parallel to the axes of the pivotal means **17** and **18** securing the lever arms together for operative action.

Preferably each of the lever arms includes a plurality of axially directed, parallel, laterally spaced webs ex-

tending the length of the lever arm and with the webs **30, 31, 32** and **33,** extending the length of the lever arm as shown in FIG. **6** whereas webs **34, 35,** and **36,** extend only the length of the pressure transmitting section.

The two pairs of levers are pivotally secured together by the fulcrum means or shafts **17** and **18,** as previously indicated, and each such fulcrum shaft extends between and through apertures **37** and **38** formed in the laterally outermost ones of the webs **30** and **36,** respectively of the individual lever arms and with such fulcrum shafts extending between pairs of such holes **37** and **38** formed in laterally aligned areas of two lever arms when positioned in operative criss-crossed relationship with central portions thereof aligned for receiving the fulcrum shafts. The remaining webs **31** through **35** have notches **39** form therein on the inner edges of the webs in relation to the operative assembly of the various lever arms for receiving the fulcrum shafts therein but not being threadedly engaged therewith. The notches receive the fulcrum shafts for compressive pressure transmission there-between in the operative can crusher as assembled. End portions of the webs of the lever arms of each pair are interleaved with relation to each other when engaged and the lever arms are reversed in relative positions. Likewise the webs of the lever arms of one pair of lever arms are laterally offset slightly from the corresponding webs in the corresponding lever arm for interleaved engagement therewith.

Such fulcrum means **17** and **18** hence extend through corresponding holes **37** and **38** formed in each of the lever arms **11** and **14,** etc.

The pivotal or fulcrum means **13** and **16** used for securing the two arms of the pairs of lever arms together include fulcrum shafts **41** that extend between the longer webs **30** through **33** at the operative pressure transmitting end section and with fulcrum receiving notches **42** being formed in the vertically outwardly facing edges of the shorter webs **34, 35** and **36** of the lever arms when operatively positioned whereby such notches **42** will engage the short fulcrum shaft of the associated lever arm with which the lever arm **11** as shown engages. Hence such left lever arms **11** would engage with its corresponding left lever arm **12** by the short fulcrum shafts **41** provided on each of the lever arms engaging the notches in the companion webs formed on the associated lever arm. These notches **42** face outwardly of the operative lever arm assembly for transmitting compressive pressures there-between at the laterally outer portions of the criss-cross lever arm assembly.

It should be appreciated that the can crusher of the invention can be made from any suitable members secured together by fulcrum shafts, bolts or the like and that a permanent assembly of the lever arms can be made or a removeably type of engagement can be provided between the lever arms. By removeable engagement of the apparatus of the invention, it is possible to dismantle and clean, repair or inspect the can crusher apparatus when desired. Normally, the fulcrum shafts **17** and **18** removably engage the individual lever arms **11** and **14** and **12** and **15,** respectively, to aid in providing releasable engagement there-between. The other fulcrum means formed by and including the pivotal means **13** and **16** as previously described can be forced into engagement by bringing a pair of the levers into back to back relationship and forcing the one lever arm to have its short fulcrum shaft **41** engage the notches **42** in the associated lever arm and vice versa for the engagement of the short fulcrum shaft on the other lever arms with the notches **42** in the second lever arm whereby operative pivotal engagement for pressure transmission can be achieved between the two lever arms. The pairs of arms then are joined by the members **17** and **18.**

Each lever arm has a frame plate **50** usually formed as a unit with the frame webs **30, 31** etc. Such plate may include an inclined end **51** at the free end of the pressure applying section. Hence, the apparatus can be opened by lifting the lever arms **11** and **14** as shown in FIG. **1.** Then the ends **51** of the levers **12** and **15** will slide along on a support surface as crushing pressure is exerted by the apparatus on an article within the enclosure **24** as downward pressure is applied to the levers **11** and **14.**

The end portions of the webs **30-36** are inclined at **52** with relation to the longitudinal axis of the straight lever arm to facilitate complete collapse of the apparatus **10** as indicated in FIG. **1** for complete crushing or flattening of a can in the enclosure **24.**

In view of the foregoing, it is that an attractive, compact, sturdy can crusher apparatus or the like has been provided. Hence the objects of the invention have been achieved.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention.

What is claimed is:

1. A manually operated can crusher device or the like comprising

two pairs of pivotally engaged lever arms, and

two hinge fulcrums individually engaging corresponding individual arms of the two pairs of arms to secure them together in criss-cross relation and form a central pressure chamber from portions of said lever arms which are movable to a superimposed substantially flat position to crush any article in said chamber.

2. A crusher device as in claim **1** where said lever arms are all of the same shape and size and each includes a widened end section at a chamber forming end thereof and a lever portion protruding from said end section.

3. A crusher device as in claim **2** where each said lever arm is a plastic molded article and has longitudinally extending laterally spaced ribs for interleaved end engagement with the ribs of another of the lever arms.

4. A crusher device as in claim **3** where said ribs have hinge fulcrum engaging slots formed in ends of said ribs at an offset portion of said widened end section and a hinge pintle at the ends of the other ribs of the remaining portion of said end section for facilitating assembly of the pairs of said lever arms, the hinge fulcrums being positioned intermediate the ends of said lever arms.

5. A crusher or compactor apparatus for cans or other articles and comprising:

two pairs of lever arms pivotally engaged at the ends thereof, each lever arm having a pressure transmitting end section, and

means pivotally engaging corresponding axially inner ends of said end sections of the individual lever arms of both of said pairs of lever arms to secure

them together to form a 4-sided compression enclosure from said lever end sections, which enclosure is flattened when the lever arms are moved together and which is opened when the lever arms are moved apart.

6. Apparatus as in claim **5** where all of said lever arms are of identical construction.

7. Apparatus as in claim **1** where each lever arm has a pressure applying end section, and said pressure transmitting end section is about twice the width of said pressure applying end section and has an offset portion, and includes a flat pressure transmitting inner surface.

8. Apparatus as in claim **7** where each lever arm includes a plurality of axially directed, parallel, laterally spaced webs extending the length of said pressure transmitting end section,

said lever arms of each pair of lever arms being secured together by fulcrum shafts individually secured to and extending across said lever arms only at the portions of said pressure transmitting end sections aligned with said pressure applying end sections, said webs in the offset portions of said pressure transmitting end sections being slotted on edges of end portions thereof to engage the fulcrum shaft of an associated lever arm for pivotal compressive pressure transmitting engagement therebetween.

9. Apparatus as in claim **1** where the lever arms are movable from an open inoperative position to a closed pressure position, four of said lever arms are pivotally engaged with each other by four fulcrum means for applying compression pressure to any article within said compression enclosure when said lever arms are moved to a collapsed criss-cross position.

10. Apparatus as in claim **8** where each said lever arm is flat and has a frame plate formed with said webs thereon, and each of said pressure transmitting end sections has said webs protruding therefrom at an angle offset from the longitudinal axis of such lever arm to facilitate securing pairs of said lever arms together and positioning said lever arms substantially parallel when the apparatus is flattened for article crushing action.

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