

[54] **TRASH COMPACTOR HAVING MEANS FACILITATING TRASH REMOVAL THEREFROM**

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[52] **U.S. Cl.** **100/218**

[51] **Int. Cl.** **B30b 15/32**

[58] **Field of Search** 100/218, 229 A; 220/17, 63, 93; 224/49; 206/45.16

[56] **References Cited**

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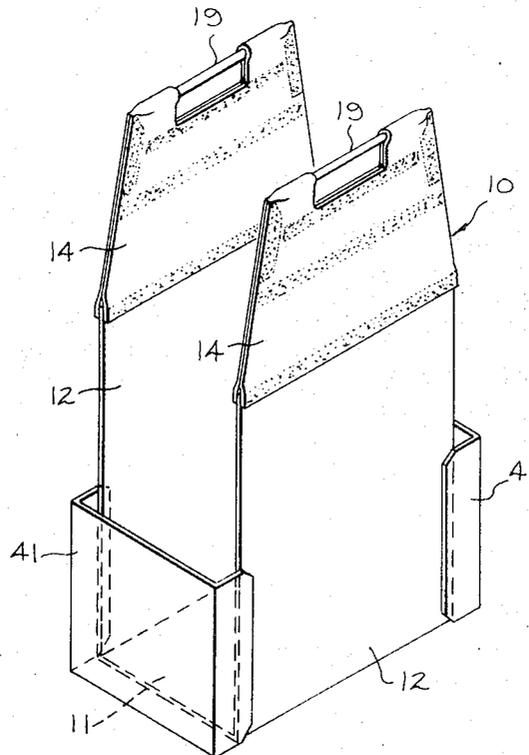
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[57] **ABSTRACT**

Refuse storage apparatus such as a compacting appliance of the type having a driven ram for compacting collected refuse in a bin is provided with an elongated band for use as a sling in manually removing the compacted trash from the bin. The sling is specifically designed to conform to the inside of the bin and is disposed to underlay the trash in the bin. Flap portions of the sling are adapted to be foldably retracted and positioned so as not to interfere with general operation of the compacting apparatus. The flap portions are further adapted to be manually pulled upwardly from opposite sides of the bin and brought together whereby the sling, with the compacted trash enwrapped therein, may be withdrawn from the bin by the operator exerting a lifting force on the flap portions. The sling facilitates removal of the compacted trash from the bin and enables the operator to conveniently carry the compacted trash from the compacting apparatus for final disposal with less likelihood of accidental staining to the operator's clothes or abrasion from sharp edges of crushed items in the load of trash.

13 Claims, 8 Drawing Figures



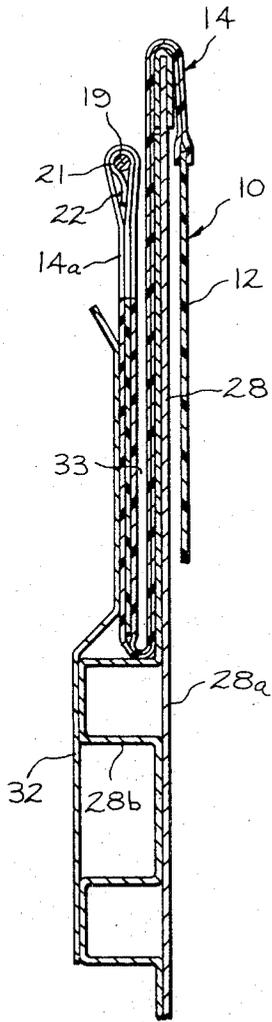


FIG. 5

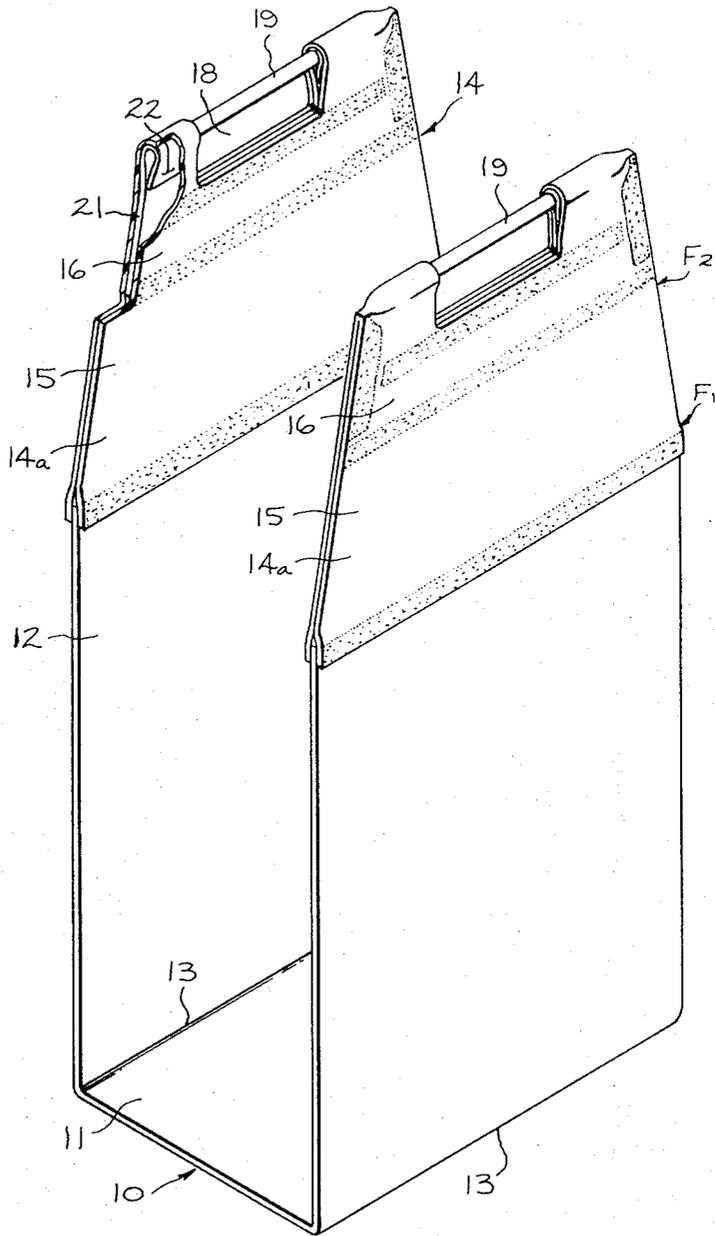


FIG. 1

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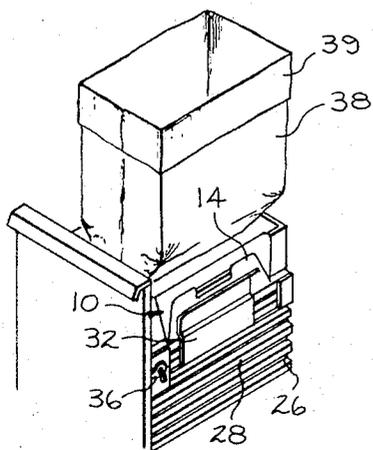


FIG. 3

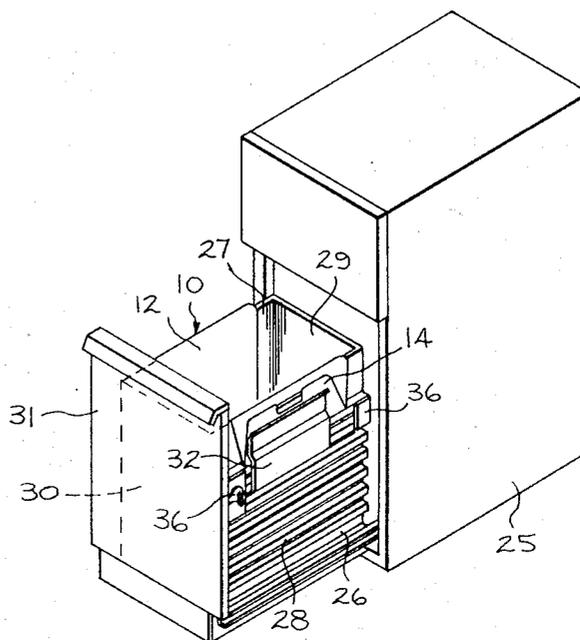


FIG. 2

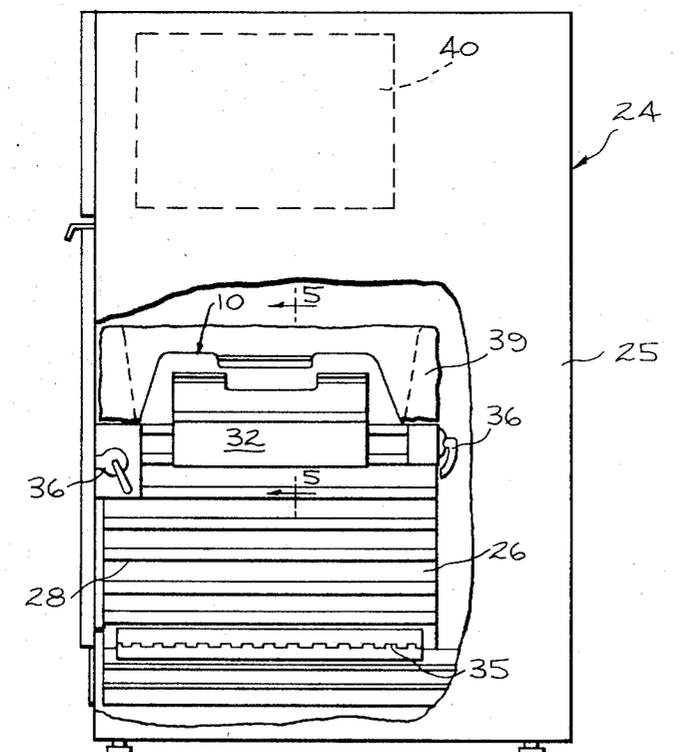


FIG. 4

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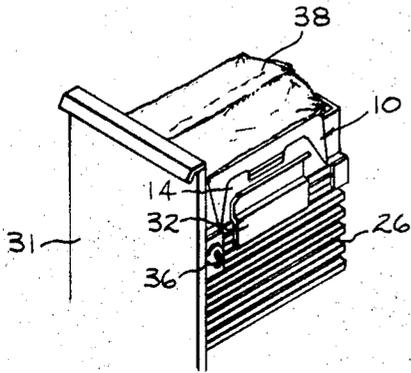


FIG. 6

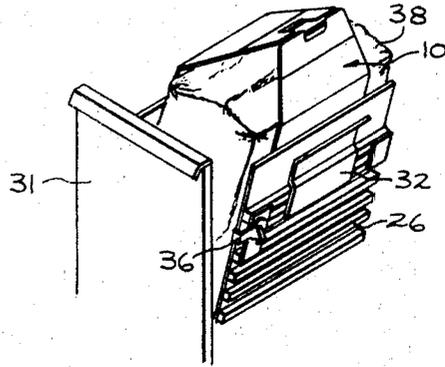
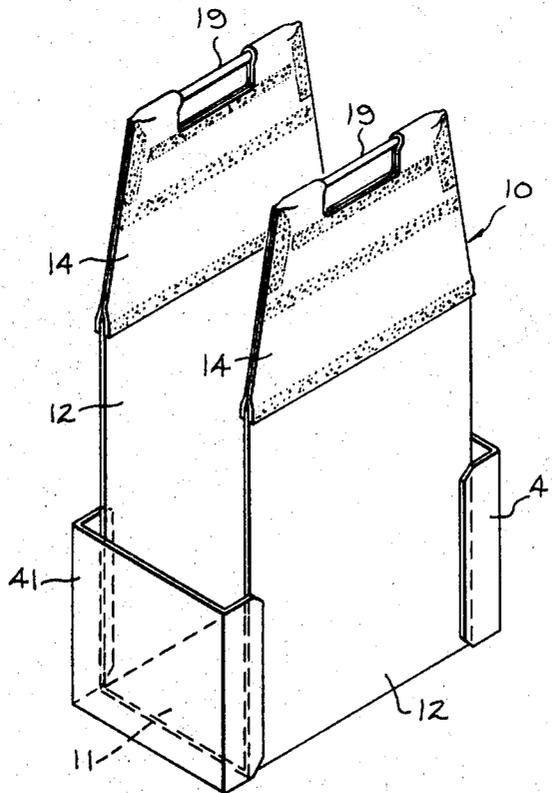


FIG. 7

FIG. 8



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BACKGROUND OF THE INVENTION

This invention relates generally to refuse storage apparatus and in particular to means in combination with a trash compacting appliance for facilitating removal of compacted trash from the apparatus. appliance

The problems of household trash disposal have resulted in comparative recent activity on the part of appliance manufacturers in the development of household refuse compacting appliances. Such an appliance, in the form of a trash compacting mechanism housed in a cabinet, enables reduction of the common nuisance involving frequent transfer of trash to an outside disposal point.

Collection and compaction of trash in a compactor may include the use of a disposable container, such as a bag nested in a rigid receptacle, for holding trash for compaction whereby the appliance remains substantially clean and the compacted trash is thereupon removable from the appliance in the form of a closed package. The rigid receptacle may be an open bin or drawer than can be withdrawn from the compactor cabinet to enable removal of the compacted packaged trash.

A typical compactor may involve the use of a ram compacting mechanism capable of exerting a force in excess of 2,000 pounds. Thus, a compacted load held in a rigid receptacle of a compacting appliance may be difficult for a housewife or other operator to withdraw due to binding and sticking of the load against the receptacle's side walls. The top of a bag or other disposable container used to hold trash in the receptacle may tend to tear in response to being subjected to the manual pulling force needed to release the compacted load from the receptacle. Further, glass bottles and cans compacted as part of the load may perforate the side of the disposable container and thereby subject the operator to the hazards of laceration or staining while transporting the compacted trash for disposal.

The problem of removal of the compacted trash from the rigid receptacle in a compacting appliance has been previously considered and several solutions have been proposed. One solution has been the provision of a receptacle having upwardly outwardly tapered side walls whereby, once the load is initially broken free, the receptacle has the unloading characteristic frequently provided in a female mold form or cavity familiar in the molding press art. Another proposed answer to this problem has been the provision of means to expand at least a portion of the rigid receptacle side wall to enlarge it and thereby facilitate removal of the compacted trash therefrom. For example, wherein the receptacle is of a rectilinear configuration with an open top side, one side wall thereof may be hinged on a horizontal axis along its lower edge and be provided with latch means to normally hold it in an upright position. Unlatching the side wall and tilting it away from the remainder of the receptacle tends to break the load away from the major portion of the receptacle.

The latter solutions to the problem of freeing the compacted load from a receptacle do not include an answer to the problem of direct contact between the body of the operator and the compacted trash during transfer of the compacted trash package from the appliance to a remote trash pick-up point.

SUMMARY OF THE INVENTION

The present invention comprehends the provision of means to facilitate manual removal and transport of a compacted stored load from a trash compacting appliance. More specifically, the invention provides, in combination with refuse compacting and storing apparatus, a sling for lifting a compacted load from a load-supporting receptacle in the appliance. The sling is preferably in the form of an elongated band adapted to conform to the shape of the inside of the receptacle. The sling preferably has handle means provided with flap portions at its opposite ends that are flexible and foldable to enable them to be retained outwardly of the receptacle in an accessible position, whereby, when it is desired to remove a load of compacted trash from the receptacle, the sling may be easily grasped to enable quick removal of the compacted trash from the appliance. The preferred construction of the sling of the present invention renders it particularly adaptable for use in combination with a slidable drawer type of load-supporting receptacle in a compacting appliance, with or without other means to aid in freeing the compacted load from the receptacle.

DETAILED DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a sling or load-lifting band constructed in accordance with the present invention;

FIG. 2 is a perspective view of a compacting appliance wherein the load-supporting receptacle therewith is a slidably mounted drawer shown in an outward position relative to the appliance cabinet and having a sling of the type shown in FIG. 1 installed in the drawer;

FIG. 3 is a fragmentary perspective view of the receptacle or drawer of a compacting appliance of the type shown in FIG. 2, showing a disposable bag or container being placed within the drawer after the sling is in its installed position within the drawer and beneath the bag;

FIG. 4 is a side elevational view of a compacting appliance, with a portion of the cabinet side wall thereof cut away to reveal the drawer or receptacle thereof in its closed position and having a disposable container and sling nested therein;

FIG. 5 is an enlarged view in vertical section taken along lines 5—5 of FIG. 4 but differing from FIG. 4 in that the disposable bag is removed from the drawer to better illustrate the disposition of the handle portion of the sling in its retracted position relative to the drawer side;

FIG. 6 is a fragmentary perspective view of the drawer of a compacting appliance as it appears just prior to removal of a load of compacted trash therefrom;

FIG. 7 is a perspective view of a compacting appliance drawer having the compacted load removed therefrom in accordance with the present invention; and

FIG. 8 is a perspective view of an alternate embodiment for a sling construction for use in the load-supporting receptacle of a compacting appliance.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 1 there is shown a component of the present invention in the form of a sling or load lifting band 10

having an intermediate or bottom portion 11 that is flanked by opposite vertically oriented and identical side portions 12. The bottom 11 and the side portions 12 are preferably formed from a single sheet of high density polyethylene or other similar material of a thickness preferably in the range of forty to fifty thousandths of an inch. The material is pre-creased along lines 13 so that the bottom 11 and the side portions 12 constitute a semi-rigid box-like structure wherein the side portions will flex toward each other. A substantially large flap portion 14 is affixed to the upper end of each of the side portions 12. The flap portions 14 serve both as projecting means when the band is installed in a refuse storage apparatus and as handle means as hereafter described. Each flap portion 14 preferably includes a relatively flexible foldable area or section 15 and a comparatively stiff area or section 16. The stiff area 16 is provided with an opening 18 across which extends a rigid means, for grasping and handling the sling 10, in the form of a rod 19.

The flap portion 14 is preferably a two-layer flap constructed from a single relatively large piece 14a of substantially thin reinforced vinyl cloth or polyethylene sheet or the equivalent having a preferred thickness of four thousandths of an inch. This material is cut to the preferred configuration and folded over to form the two-layer flap portion 14. A stiffener 21, preferably of high density polyethylene sheet or the equivalent having a preferred thickness of fifteen to twenty thousandths of an inch, is sandwiched between the two halves in the area of the opening 18 and wrapped once around the two ends of the rod 19. The rigid rod 19 is preferably a carbon steel wire having a plastisol coating thereon. The stiffener 21 is fastened in place, preferably by heat welding through the body of the flap portion 14. Prior to the installation and welding of the stiffener 21, staples 22 may be used to fasten the stiffener 21 about the rod 19, as shown in FIG. 1. The preferred pattern for the heat weld is shown by stippling in FIG. 1. It will be noted that the stiffener 21 is welded in place and is configured to extend upwardly and over opposite ends of the rod 19 to retain the rod in the flap portion structure. Along the lower edge of the flap portion 14, the two thicknesses or layers thereof are separated whereby they overhang each side of the upper edge of side portions 12 and are affixed thereto preferably by the same heat welding process utilized to form the stiff area 16 of the flap portion 14. Formation of the flap portion 14 by the means heretofore described enables the flap portion to be folded through the flexible area 15 for a purpose to be hereafter described. The material from which the relatively stiff bottom 11 and side portions 12 are formed is preferably of a composition having a low surface friction characteristic and a stiffness whereby it does not tend to yield and deform from pressure of cans or glass fragments pressing thereagainst during trash compaction.

In FIG. 2 there is shown a trash compacting appliance 24 including a cabinet 25 having support means in the form of a receptacle or bin 26. The receptacle 26 is formed as a drawer adapted to be slidable relative to the cabinet 25 between an inward compacting position and an outward loading and unloading position. The drawer 26 comprises a flat bottom (not shown) having oppositely disposed side walls 27 and 28 projecting upwardly therefrom. An inward back wall 29 and a front wall 30 interconnect opposite ends of the side walls 27

and 28 to complete the drawer 26 configuration. A front appearance panel 31 is affixed across the front wall 30 and is designed to blend with the cabinet 25 structure when the drawer 26 is in the closed position. Each side wall 27 and 28 has retaining means therewith, such as spring steel retainer 32 shown in vertical section in FIG. 5. As shown in FIG. 4, the side wall 28 may be adapted to hinge relative to the remainder of the drawer structure by provision of a hinge 35 and latch means 36. This provides the operator with a means of dislodging the compacted load in the manner shown in FIG. 7. Each side wall and end wall of the drawer 26 may be of a double wall construction as shown particularly in FIG. 5 with reference to side wall 28. The side wall 28 comprises an inner wall portion 28a spot-welded to an outer wall portion 28b. The outer wall portion 28b, particularly along approximately the lower two-thirds of the side wall, is of an accordion or corrugated configuration to provide structural strength to withstand the compacting action. Approximately the upper third of the side wall 28 is of a flat configuration wherein the inner wall portion 28a and the outer wall portion 28b are spot welded to be contiguous and co-extensive.

The retaining means on the outside of the drawer side wall 28 may comprise a retainer 32 constructed from sheet metal and formed in the configuration shown in FIG. 5. The lower end of the retainer 32 is fixedly attached to outward protruding portions of the wall portions 28b whereby the upper end of the retainer 32 is spaced some distance outwardly from the upper part of the side wall 28. This arrangement creates a pocket area 33 between the upper end of the retainer 32 and the adjacent portion of the side wall 28. The flap 14 of the sling 10 is folded to the configuration shown in FIG. 5 whereby the major part thereof is held in the pocket area 33 and the distal end thereof projects upwardly so that the access opening 18 beneath the rod 19 is easily accessible to the operator of the machine. The flap portion 14 is thus disposed so that it can be quickly drawn upwardly from the retainer 32 for using the sling 10 to remove a load from the drawer 26. It should be noted with reference to FIG. 5 that the pocket area 33 is of a size that will permit the cuff of a disposable bag to be inserted downwardly therein on the outside of the folded flap portion 14 whereby it overlays and substantially conceals that portion of flap portion 14 that is on the outside of the drawer 26.

As shown in FIG. 3, it is preferred that a disposable container in the form of a trash bag 38 be utilized to line the drawer 26 to collect accumulated trash to be compacted therein. The bag 38 has a bag closure means or cuff 39 around its open end that is turned outwardly and down around the side walls and end walls of the drawer 26 to the disposition shown in FIG. 4. The sling 10 is adapted to be installed within the drawer 26, as shown in FIG. 2, prior to installation of the trash bag 38. The bottom portion 11 and the side walls 12 of the sling 10 are of a size and shape to conform closely to inside of the drawer 26. The flexible area 15 of the flap portion 14 is provided to facilitate folding of the flap portion along two horizontal fold lines indicated by F₁ and F₂ in FIG. 1. When the sling 10 is installed in position in the drawer 26, the flap portion 14 is folded outwardly along fold line F₁ and then folded backwardly upon itself along fold line F₂ so that the folded flap can be slipped downwardly behind the retainer 32

as shown in FIG. 2. The flap portions 14 are thus retracted and then retained by the retainers 32 until such time as the operator wishes to remove a compacted bag of trash from the drawer 26.

After the sling 10 is installed, as heretofore described, in the drawer 26, the bag 38 is slipped into the drawer as shown in FIG. 3 and the bag cuff 39 is disposed outwardly around the upper edge of the drawer as shown in FIG. 4. The bag cuff 39 is also retained along the drawer side walls, within the retainers 32, and is disposed over the respective flap portions 14 of the sling 10. Retention of the cuff 39 and the sling flap portions 14 by the retainers 32 assures that the sling and bag will not hang up or bind upon the cabinet structure of the compactor 24 when the drawer 26 is manually moved from the inward compacting position to the outward loading and unloading position. Use of the retainers 32 also assures that the bag 38 and the sling 10 are less likely to shift position when the ram means, indicated by dotted outline 40 in FIG. 4, is operated to compact trash within the drawer 26. By having the bag cuff, at each side of the drawer 26, held within the folded flap portion 14, as shown in FIG. 4, the rod 19 is exposed and accessible whereby pulling it upward will serve to dislodge the bag cuff from the retainer 32. Thus, removal of the bag cuff from the retainer is an incident occurring in response to the action of withdrawing the flap portion 14 outward to its full extended length.

When the bag 38 is filled with compacted trash and the operator desires to remove the bag 38, the bag cuff 39 is pulled upwardly away from the drawer 26 and folded to a closed position as shown in FIG. 6. Thereafter, the operator may grasp the flap portions 14 of the sling 10 by slipping the fingers beneath the rod 19 of each flap portion 14. The flap portions 14 are brought together over the closed bag as shown in FIG. 7 so that the sling 10 may be pulled upwardly and outwardly with the loaded bag lodged therein. The sling and the loaded bag may then be carried out of the home to a disposal point after which the sling 10 is returned to its installed position within the drawer 26 and a new bag 38 is installed on the sling within the drawer.

The structure of the sling 10 may be variously modified without departing from the basic requirements that it facilitate removal of compacted trash from the drawer 26 and that it also provide protection for the operator against clothing stains or abrasion by items of trash that may project through the side of the disposable bag. In FIG. 8, a modification of the sling 10 is shown wherein end panels 41 are provided as integral parts of the sling structure. The end panels 41 are preferably constructed from the same semi-rigid material from which the bottom portion 11 and the side portions 12 are constructed. The end panels 41 may be heat welded to the side walls 12 in the disposition shown in FIG. 8. In this embodiment the end panels 41 are adapted to respectively contact the inside surface of the back wall 29 and the front wall 30 of the drawer 26 and further facilitate removal of a compacted bag of trash from the drawer 26 by preventing sticking and binding of the load against the drawer ends.

It should be evident from the foregoing description that the invention is not intended to be limited to the particular details of construction of the examples illustrated and described. It is anticipated that various other modifications or applications will occur to those skilled

in the art. It is therefore intended that the appended claims shall cover such modifications and applications as do not depart from the true spirit and scope of the invention.

I claim:

1. A trash compacting appliance including a cabinet, a ram mounted in the cabinet, an open top bin for holding refuse to be compacted by the ram, releasing means with the bin to facilitate manual removal of compacted trash therefrom including a sling adapted to conform to the shape of the bin and lay against the bin's inner surface wherein trash compacted in the bin is compacted at least against an intermediate portion of the sling, and the sling having flap means adapted to project outwardly from the bin to facilitate manual removal of the sling, with compacted trash carried therewith, from the bin.

2. The invention of claim 1 wherein the bin is arranged to be movable to and from the cabinet and includes retaining means thereon for removably fastening the flap means of the sling against the bin side walls.

3. The invention of claim 1 wherein the releasing means further includes a portion of the bin adapted to be selectively moved away from the remainder of the bin so as to enable easier manual removal of the sling, with compacted trash carried therewith from the bin.

4. The invention of claim 1 further including a disposable container adapted to nest in the bin and over the sling to receive trash to be compacted therein.

5. The invention of claim 1 further including a disposable container adapted to nest in the bin over the sling, the disposable container having a flexible cuff around its open end adapted to fold outwardly around the top edge of the bin, and retaining means on the bin removably fastening the container cuff in a predetermined position thereon, and the retaining means also removably fastening the flap portions of the sling to the bin.

6. The invention of claim 1 wherein the sling is constructed substantially from a thermoplastic material.

7. The invention of claim 1 wherein removal of the container cuff from the retaining means is accomplished as an incident of manually withdrawing the flap portions outwardly from the retaining means.

8. A domestic trash compacting appliance comprising a cabinet, a drawer adapted for movement between an outward position at least partly outwardly from the cabinet and an inward compacting position, a ram mechanism within the cabinet having a ram adapted to be selectively moved into the drawer to compact trash therein when the drawer is in the inward position, means facilitating manual removal of compacted trash from the drawer comprising an elongated band adapted to be disposed substantially within the drawer prior to depositing trash therein, and the band having projecting means extending outwardly from the drawer to facilitate manipulation of the band in removing compacted trash from the drawer.

9. The invention of claim 8 wherein the drawer is provided with a disposable bag for receiving trash to be compacted, and the bag is provided with closure means whereby compacted trash may be wrapped within the bag, and the projecting means of the band comprises oppositely disposed flap portions adapted to be manually brought together above the closed bag whereby the bag can be removed from the drawer by a one-hand lifting force exerted on the band.

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10. The invention of claim 8 wherein the projecting means comprises a first flap portion at one end of the band and a second flap portion at the other end of the band and each flap portion is adapted to extend outwardly beyond the top edge of the side wall of the drawer, retaining means is provided on the outside of the drawer, and each flap portion is adapted to fold downwardly and be removably retained by the retaining means such that the drawer may be manually moved between its outward and inward positions without interference from the flap portions.

11. The invention of claim 8 wherein the projecting

means comprises flap portions at each end of the band, and each flap portion is provided with an opening therein to enable grasping the band by the hand of the appliance operator.

12. The invention of claim 8 wherein the band is constructed substantially from a flexible thermoplastic material.

13. The invention of claim 8 wherein at least a portion of the band adapted to be installed within the drawer is a material having the characteristic of substantially low surface friction.

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