

[54] COLLAPSIBLE DEVICE FOR STACKING AND BUNDLING OF PUBLICATIONS

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[51] Int. Cl. **B65b 13/18**

[58] Field of Search..... 100/1, 34; 214/10.5 R; 211/50, 177; 248/149, 165, 172; 108/55; 220/6; 206/223, 386

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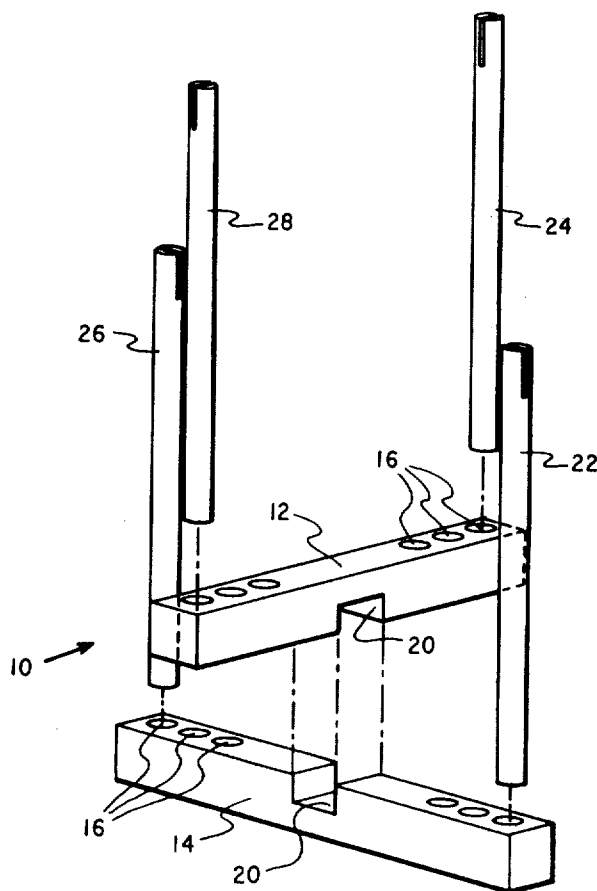
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[57] ABSTRACT

A collapsible, semi-rigid device for use in stacking newspapers, magazines and other publications in an orderly manner for disposal, such device including means for positioning baling twine or similar bundling material in such a manner that the stack may be conveniently bundled when it has grown to a predetermined height. The device comprises a pair of elongated base members adapted to be detachably interlocked in a horizontal crossed configuration with their upper surfaces defining a plane upon which the publications can be stacked. Each base member has a plurality of upwardly facing sockets formed in each of its ends, each socket being adapted to mate loosely with and support a respective upright member when such member is inserted into the socket. Four such upright members are provided, one for each end of the pair of crossed base members so as to define the sides of a rectangular-shaped open enclosure in which the publications can be stacked. The dimensions of such enclosure are selectively variable, depending upon which of the multiple sockets in the ends of each base member are utilized, so as to accommodate different sized publications. The top of each upright member is provided with a slot or other fastening means for holding the baling twine in a position traversing the bottom and sides of the enclosure as the stack is formed.

7 Claims, 4 Drawing Figures



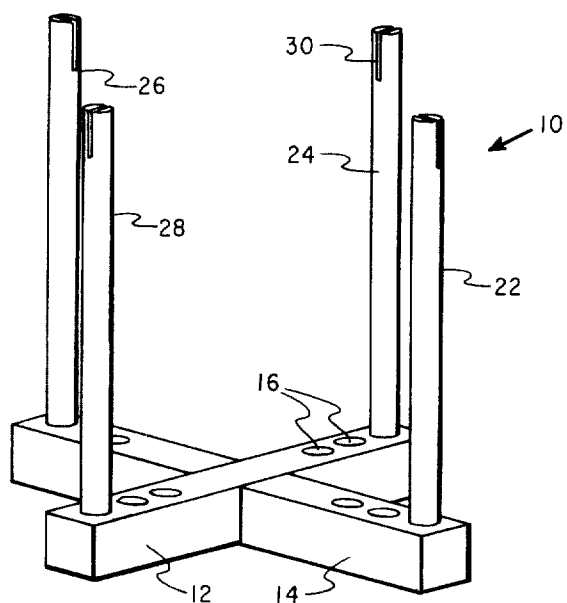


FIG. 1

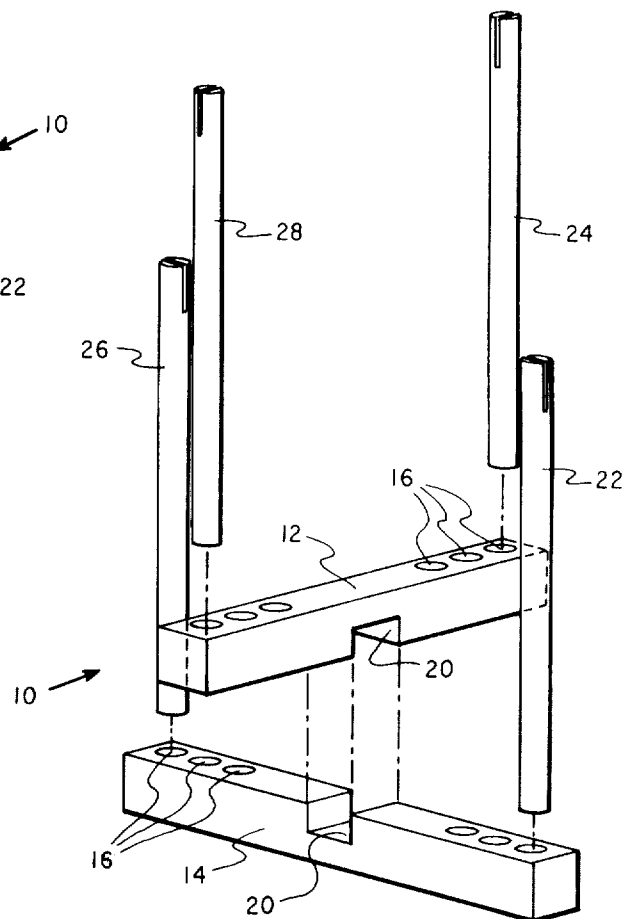


FIG. 2

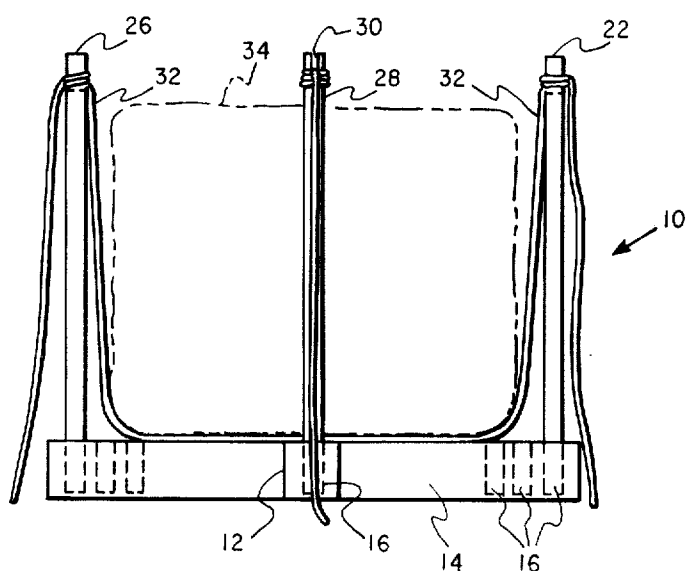


FIG. 3

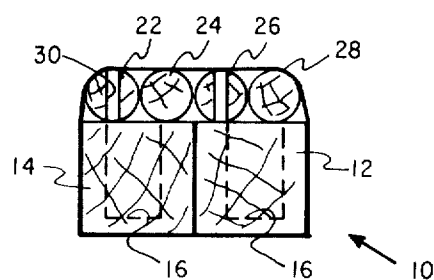


FIG. 4

COLLAPSIBLE DEVICE FOR STACKING AND BUNDLING OF PUBLICATIONS

BACKGROUND OF THE INVENTION

This invention relates to a collapsible device for facilitating the stacking and bundling of newspapers, magazines and other publications of various sizes for recycling.

At present there exists a severe problem with respect to the disposal of solid waste materials. The steady decrease in the availability of land has rendered dumps and sanitary land fills inadequate to handle the substantially greater volumes of solid waste generated each year by the public. Burning of solid wastes is not an acceptable solution because of resultant atmospheric pollution. A significant proportion of the solid waste presently being generated consists of newspapers, magazines and other similar publications. Although for many years an effort has been made to encourage the public to bundle these publications for recycling, thereby not only partially relieving the waste disposal problem but also helping to alleviate shortages of raw materials for newsprint, a large segment of the public has found it too inconvenient to stack and bundle the publications for recycling and has instead simply disposed of them as garbage. It would appear that if the public were supplied with a simple, inexpensive device which would facilitate the stacking and bundling of magazines, newspapers, etc. and thereby minimize the effort involved, a much greater degree of cooperation in the recycling effort could be obtained and the solid waste disposal problem could be relieved to some degree.

SUMMARY OF THE PRESENT INVENTION

The present invention is accordingly directed to such a device adapted to facilitate the stacking and bundling of publications. The device is entirely collapsible so that it can be shipped and sold in a compact package to minimize freight, storage, and other costs of sale so that the savings can be passed on to the customer. The device comprises a pair of detachably interlocking elongated base members adapted to lie horizontally in a crossed configuration for supporting publications stacked on top of the base members. Each base member has a plurality of upwardly facing, longitudinally spaced sockets at each end adapted to accept and support a respective upright frame member. Four such upright members are provided, each insertable at a respective end of the crossed members so as to project upwardly and define the sides of an open stacking enclosure of rectangular cross-section. The size of the enclosure is variable depending upon which of the multiple sockets are utilized, the largest enclosure being suitable for stacking newspapers and the smaller sized enclosures for stacking magazines of various sizes. Slots or other fastening means are provided at the respective tops of the upright members for holding two pieces of baling twine or other flexible bundling material at right angles traversing the bottom and sides of the enclosure during the formation of the stack. The fastening means are such as to prevent the attached twine from being pulled downwardly along the respective upright members so that the weight of the stack can place tension on the twine. Inasmuch as the device is readily collapsible, the various base members and upright members are somewhat loosely connected to one another for easy detachment rendering the device semi-rigid, but

the aforesaid tension on the twine forceably keeps the tops of the upright members pulled toward the center of the stacking enclosure thereby counteracting the outward pressure of the stack which tends to spread the upright members. When the stack reaches a predetermined height, equal to the height of the upright members, the twine may be unfastened from the upright members and the ends tied tightly together at the top of the stack, thereby forming a bundle.

It is accordingly a primary objective of the present invention to provide a collapsible device for facilitating the stacking and bundling of publications, such device being extremely simple in construction and use, inexpensive, and readily capable of disassembly into a compact package.

It is a further objective of the present invention to make such device adjustable so as to permit it to be used for stacking and bundling publications of different sizes.

It is a further objective of the present invention to make such device adaptable for utilizing the weight of the stack to strengthen and maintain the structural integrity of the device.

The foregoing and other objectives, features and advantages of the present invention will be more readily understood upon consideration of the following detailed description of the invention, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the device in its assembled form.

FIG. 2 is an exploded view of the device illustrating its manner of assembly and disassembly.

FIG. 3 is a side elevation view of the device showing the attachment of the baling twine and the relation of the device to a stack of publications, the latter being shown in phantom.

FIG. 4 is an end view of the components of the device shown in a compact, disassembled form.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The stacking and bundling device of the present invention, indicated generally as 10, comprises a pair of base members 12 and 14 respectively, each being of the same height and preferably having different lengths, and each having a plurality of upwardly facing sockets 16 spaced longitudinally of said members at either end thereof. Each member has a notch such as 20 formed at its center having a width slightly greater than the width of the other base member, the notch in one of the base members 12 facing downwardly while the notch in the opposite base member 14 faces upwardly. Each notch is cut to a sufficient depth to permit the two members 12 and 14 to be detachably fitted together and crossed in interlocking relationship as shown in FIG. 1 so that their upper surfaces and lower surfaces respectively are each coplanar.

Four upright members 22, 24, 26 and 28, preferably of equal length, are adapted to fit loosely into any of the upwardly facing sockets 16 so as to be supported thereby. Each upright member has a notch such as 30 or similar means at its top adapted for permitting baling twine or other flexible bundling material to be fastened thereto for purposes to be described hereafter. It should be noted that the interlocking fit of the various

members with one another is relatively loose to permit easy assembly and disassembly, and thus forms a somewhat semi-rigid structure when the device is assembled. In disassembled form, the various members may be compactly packaged side-by-side as shown in FIG. 4.

In operation, the device is assembled into the frame-like structure shown in FIG. 1 with the various upright members 22, 24, 26 and 28 defining the four sides of a rectangular enclosure open at its top. The size of such rectangular enclosure is variable depending upon which of the sockets 16 the upright members are inserted into. Preferably the distance separating the outer sockets of the longer base member 14 is 15 inches while the distance separating the outer sockets of the shorter base member 12 is 12 inches. The 12 by 15 inch rectangular stacking enclosure thus defined when the upright members are inserted in such outer sockets is suitable for accepting newspapers folded in half. The center-to-center interval between respective sockets in a particular end group is preferably 1 inch, with each end group preferably comprising three sockets. When the upright members are inserted into the various combinations of inner socket positions, the various smaller enclosures thus defined are suitable for stacking different sizes of magazines which predominate in the present market. The height of the respective upright members is preferably about 12 inches so as to permit the uniform formation of stacks and bundles which are convenient to handle.

When the device has been assembled, baling twine, string or other similar flexible bundling material 32 is laid across the tops of the opposing upright members, being placed loosely through the slots 30, notches or other similar fasteners at the tops of the upright members, and one or two of the publications to be stacked and bundled are placed between the four members. As the first publication descends under the influence of gravity, it slideably pulls sufficient twine 32 through the respective slots 30 so that the crossed pieces of twine lie along the bottom and sides of the eventual bundle. The respective pieces of twine are then pulled semitaut as shown in FIG. 3 so that the center of the first publication rests on the midpoint of the crossed based members 12, 14 with its edges held slightly above the base members by the twine. Thereafter the twine is wrapped around the top of each upright member or otherwise fastened to maintain its tautness. Additional twine is permitted to hang down the outside of the respective upright members to be tied subsequently across the top of the stack when it has accumulated to the proper height.

The publications, as they are gradually piled one atop the other to form a stack 34 within the stacking enclosure, provide sufficient gravity pressure to tighten the twine and pull the tops of the respective upright members inwardly to rigid vertical positions. The slots 30 or similar fastening means prevent the twine from being pulled downwardly along the respective upright members. Thus the weight of the stack itself, transferred through the twine 32, maintains the structural integrity of the semi-rigid device by preventing side play of the upright members which might otherwise occur due to outward pressures generated by the accumulating stack.

When the bundle accumulates near the tops of the upright members, the twine is unfastened and brought together across the top of the bundle and tied. The bun-

dle, suitable for handling, is then removed and the foregoing process repeated, producing bundles of uniform height.

The terms and expressions which have been employed in the foregoing abstract and specification are used therein as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding equivalents of the features shown and described or portions thereof, it being recognized that the scope of the invention is defined and limited only by the claims which follow.

What is claimed is:

1. A collapsible device for use in stacking and bundling publications, said device comprising:

- a. multiple base members having upper surfaces for supporting said publications, each of said base members including interlocking mating engagement means for engaging one another in a collapsible horizontal configuration with said respective upper surfaces of said base members substantially coplanar, said engagement means including interlocking means for preventing substantial movement between said base members in any horizontal direction while readily permitting vertical movement between said base members, so as to permit said base members to be selectively engaged or disengaged from one another by said vertical movement to provide ready collapsibility;
- b. a plurality of upright members, each adapted to be detachably connected at its lower end to one of said base members;
- c. a plurality of connecting means on said base members for detachably connecting said upright members thereto and supporting them in alternative upright positions defining the four sides of stacking enclosures of different rectangular horizontal cross-sections, said connecting means being positioned so as to permit said upright members to be selectively supported in alternative positions approximately 1 inch apart in the length and width directions respectively of said stacking enclosures and being positioned so as to form a maximum stacking enclosure having dimensions of approximately 12 by 15 inches.

2. A collapsible device for use in stacking and bundling publications, said device comprising:

- a. a pair of narrow elongate base members having upper surfaces for supporting said publications, each of said base members having interlocking mating engagement means at their respective midpoints for engaging one another to interlock said members in the form of a collapsible horizontal cross with said respective upper surfaces of said base members substantially coplanar, said engagement means including interlocking means for preventing substantial movement between said base members in any horizontal direction while readily permitting vertical movement between said base members, so as to permit said base members to be selectively engaged or disengaged from one another by said vertical movement to provide ready collapsibility;
- b. four narrow elongate upright members, each adapted to be detachably connected at its lower end to one of said base members;
- c. connecting means on said base members for detachably connecting said upright members thereto

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and supporting them in respective upright positions defining the four sides of a stacking enclosure of rectangular horizontal cross-section;

- d. the combined widths of said pair of base members being substantially equal to the combined widths of said four upright members so that, when said device is collapsed, said elongate base members and upright members may be aligned side by side in juxtaposition with one another to form a compact elongate package with a generally rectangular cross-section.

3. The device of claim 2 wherein said connecting means for detachably connecting said upright members to said base members comprises means defining a plurality of upwardly-facing sockets in said base members for matingly accepting said respective upright members, the cross-section of each of said sockets being sufficiently larger than the cross section of each of said upright members that said upright members fit loosely within said sockets to provide ready collapsibility, and wherein each said upright member has means adjacent to its top for permitting flexible elongate bundling material to be attached tautly thereto so that when respective ends of said elongate bundling material are attached tautly across said stacking enclosure between the tops of two of said upright members on opposite sides of said enclosure, said tops of said upright members are pulled inwardly toward one another so as to resist outward pressure from said publications within said enclosure.

4. The device of claim 3 wherein each said fastening means includes an upwardly facing slot at the top of said upright member for accepting the insertion of a piece of baling twine.

5. The device of claim 2 wherein said connecting means on said base members are located so as to support said upright members at the respective midpoints of the sides of said rectangular stacking enclosure.

6. A collapsible device for use in stacking and bundling publications, said device comprising:

- a. multiple base members having upper surfaces for supporting said publications, each of said base

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members including interlocking mating engagement means for engaging one another in a collapsible horizontal configuration with said respective upper surfaces of said base members substantially coplanar, said engagement means including interlocking means for preventing substantial movement between said base members in any horizontal direction while readily permitting vertical movement between said base members, so as to permit said base members to be selectively engaged or disengaged from one another by said vertical movement to provide ready collapsibility;

- b. a plurality of upright members, each adapted to be detachably connected at its lower end to one of said base members;

c. connecting means on said base members for detachably connecting said upright members thereto and supporting them in respective upright positions defining the four sides of a stacking enclosure of rectangular horizontal cross section; and

d. flexible elongate bundling means for tying said publications into a bundle, said bundling means being fastened securely at each end to the tops of two of said upright members on opposite sides of said stacking enclosure so as to be capable of pulling tautly against the tops of said upright members when said upright members are connected to said base members, said elongate bundling means being of such a length between said tops of said upright members as to lie beneath a stack of publications within said enclosure and pull tautly inwardly against the tops of said upright members under the weight of said publications.

7. The device of claim 6 wherein said connecting means on said base members comprise means for loosely supporting said upright members to facilitate collapsibility of said device, said elongate bundling means by virtue of its ability to pull tautly inwardly against said upright members acting to resist outward pressure against said upright members.

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