

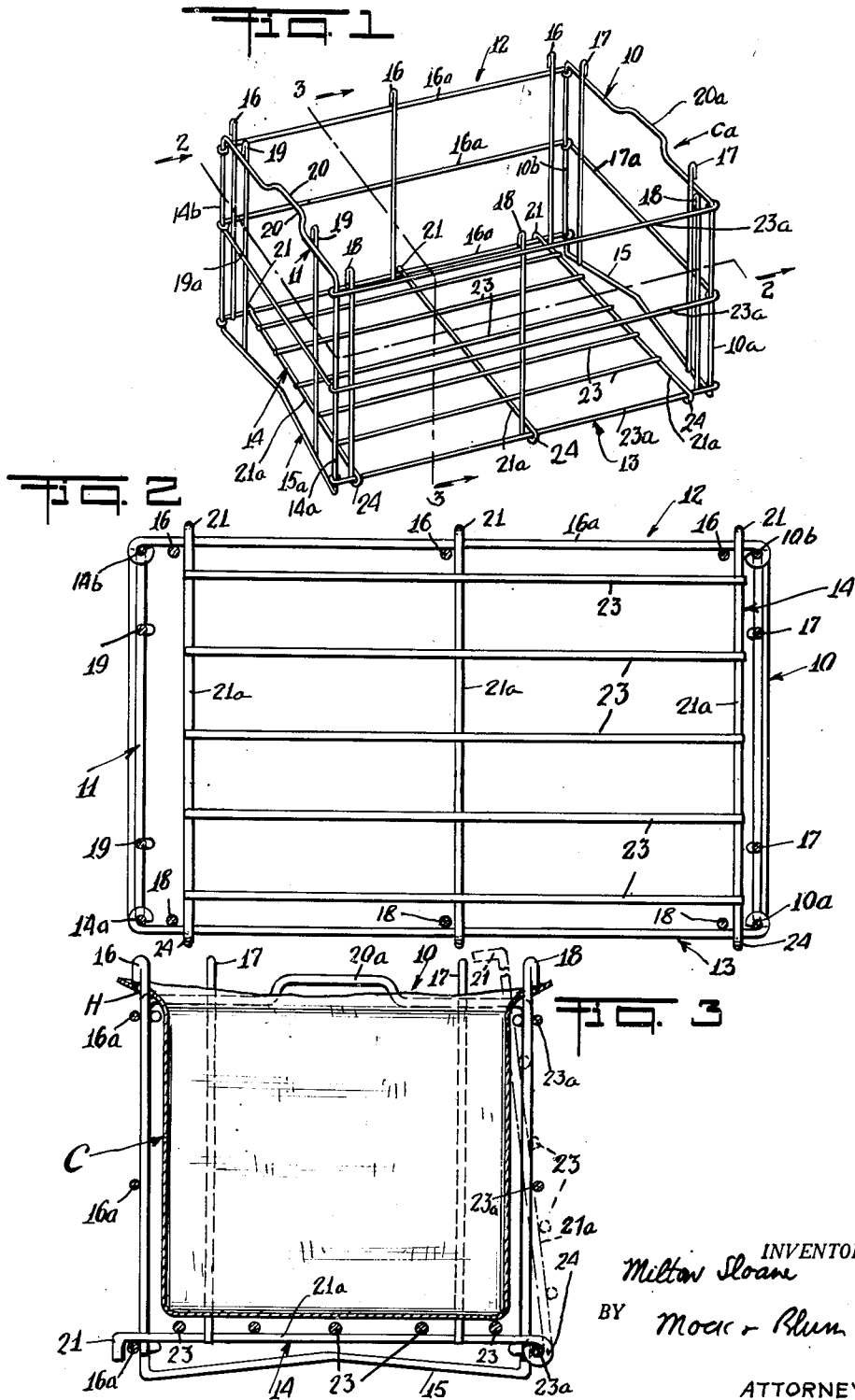
June 17, 1952

M. SLOANE
COLLAPSIBLE CONTAINER

2,600,439

Filed Jan. 26, 1946

3 Sheets-Sheet 1



June 17, 1952

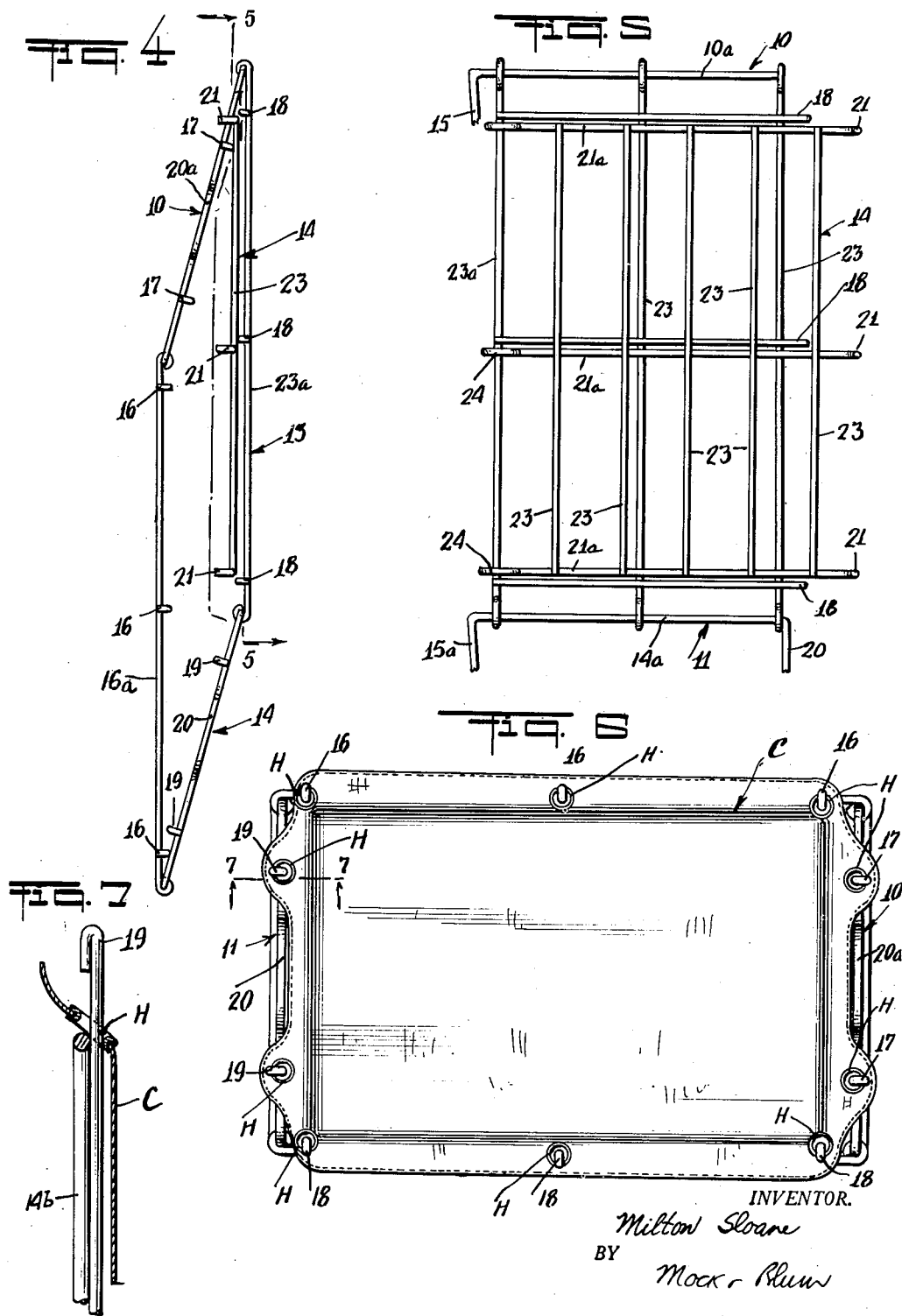
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3 Sheets-Sheet 2



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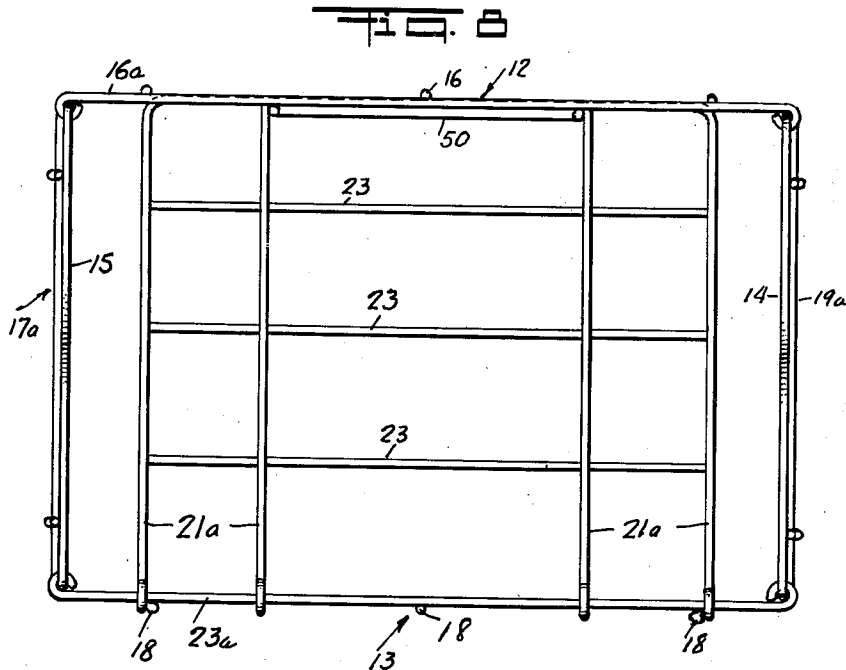
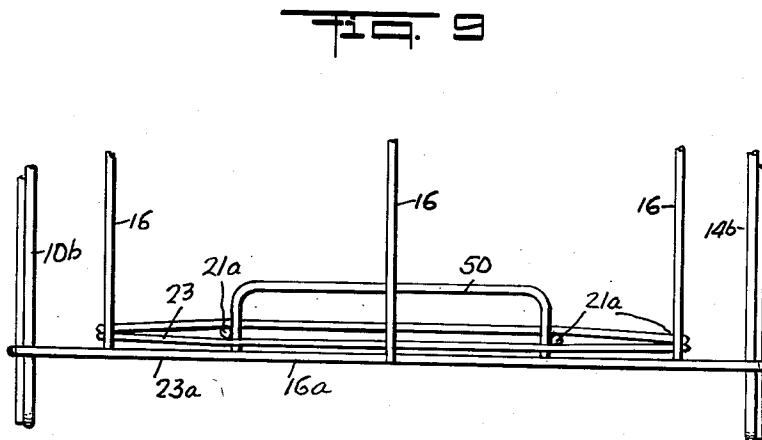
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UNITED STATES PATENT OFFICE

2,600,439

COLLAPSIBLE CONTAINER

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Application January 26, 1946, Serial No. 643,531

5 Claims. (Cl. 220-6)

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My invention relates to a new and improved collapsible container, which can be made and assembled at low cost, and which can be used in combination with a laundry bag or other inner and non-rigid receptacle, and to the aforesaid combination. This container can be collapsed to flat shape, in which its four upstanding walls are substantially parallel to each other, and also parallel to the bottom wall, which is then located between one side-wall, the other side-wall, and part of the rear wall.

Additional objects and advantages and features of my invention are stated in the annexed description and drawings, which disclose preferred embodiments thereof.

Fig. 1 is a perspective view of the container in extended and operative form, showing its bottom wall in horizontal operative position, the representation of the inner receptacle being omitted.

Fig. 2 is a section on the line 2-2 of Fig. 1.

Fig. 3 is a section on the line 3-3 of Fig. 1, the representation of the inner receptacle being included in Fig. 3. The bottom wall is shown in operative horizontal position in full lines, and in substantially vertical and inoperative position in broken lines.

Fig. 4 is a fragmentary top view of the container, in partially collapsed position.

Fig. 5 is a section on the line 5-5 of Fig. 4.

Fig. 6 is a top plan view of the assembled container and inner receptacle.

Fig. 7 is a section on the line 7-7 of Fig. 6.

Fig. 8 is a top plan view of a modified bottom wall for the second embodiment.

Fig. 9 is a front elevation of the rear upstanding wall of the container, made according to said second embodiment.

According to the invention, I provide an outer container Ca which has four upstanding walls and a bottom wall. For convenience, the four upstanding walls of the outer container Ca are respectively designated as a front wall, a rear wall, and two side or transverse walls. Said upstanding walls and the bottom wall are made of wire, whose thickness is 0.875 inch or less. The five walls of the outer container are of skeleton construction. The four upstanding walls are turnably connected to each other by means of respective loops and end-uprights. The same loop connection is used for connecting the bottom wall to the rear wall. I thus provide very compact hinge connections between the walls, so that the container can be collapsed to flat condition, in which the five walls are substantially parallel to each other.

The outer container Ca can be collapsed substantially flat, even when the inner bag C remains in position.

The invention is of particular utility for hospital use, in which large, rigid, wire baskets are

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now used for packing and transporting sheets, towels, etc. These large baskets cannot be sterilized, and the flexible cloth laundry bags are fixed externally to said rigid wire baskets, by sewing or other permanent connection. The outer cloth bag wears out, due to rubbing, in which event the entire unit must be thrown away.

According to my invention, the cloth laundry bag C is detachably located in the interior of the outer, collapsible, wire container Ca, so that the bag C is protected against wear. The cloth bag C can be easily removed and sterilized and the outer container Ca can be collapsed to flat shape, thus saving storage space.

In the first embodiment of Figs. 1-7, the outer container Ca comprises a front longitudinal wall 13, a rear longitudinal wall 12, respective side or transverse walls 11 and 10 and a bottom wall 14. The front and rear longitudinal walls 13 and 12 are identical with each other, and the side walls 11 and 10 are identical with each other. The entire outer container Ca is made of wires which can be easily bent, and which have enough rigidity to maintain the permanent shape shown in the drawings. The wire members may be resilient or non-resilient. Their thickness is 0.875 inch or less, and preferably about 0.50 inch.

For convenience, the device is described with reference to its position shown in Fig. 1, in which the walls 11, 13, 10 and 12 are vertical, the wall 13 is the front wall and the bottom wall 14 is horizontal. Of course, any of the upstanding walls 13, 12, 11 and 10 may be designated as the front wall.

Side-wall 11 comprises a continuous frame, which is preferably made of a single piece of wire, whose ends are welded or otherwise fixed to each other, in order to form a butt-joint. This integral frame consists of transverse bottom member 15a, end-uprights 14b and 14a, and a transverse top-member 20. Top-member 20 is bent upwardly between its ends, to provide a hand-hold. Bottom member 15a is bent upwardly between its ends, in any configuration. This side-wall 11 includes a horizontal transverse wire 19a, which is soldered or otherwise fixed to the end-uprights 14b and 14a. Said side-wall 11 also includes intermediate uprights 19, which are fixed to top member 20, bottom member 15a, and the wire 19a.

The side-wall 10 includes a frame, also made of one piece of wire in the manner previously described. Said frame has top member 20a, end-uprights 10b and 10a, intermediate uprights 17, and an intermediate horizontal wire 17a. Since side-walls 11 and 10 are identical, the previous description applies.

The front longitudinal wall 13 consists of three horizontal wires 23a, and three uprights 18. These uprights 18 are fixed to the three horizontal wires 23a.

The top wire 23a has pivot loops which abut the undersides of the transverse top members 20 and 20a, at the junctions or bends between said transverse members 20 and 20a, and the front end-uprights 14a and 10a. Hence the front longitudinal wall 13 cannot shift upwardly relative to the transverse walls 11 and 10.

The intermediate wire 23a has loops which overlie and abut the respective ends of the transverse wires 19a and 17a, so that the front wall 13 cannot shift downwardly relative to the side walls 11 and 10. Each wire 23a has a pivot loop at each end thereof, and said pivot loops turnably engage the front end-uprights 14a and 10a, so that the front wall 13 is turnable as a unit, relative to side walls 11 and 10.

The bottom wire 23a cannot shift vertically relative to the side-walls 11 and 10, because said bottom wire 23a is fixed to the uprights 18, which are fixed to all the wires 23a. The bottom wire 23a is thus held above the bottom ends of the end-uprights 14a and 10a, and above the ends of the transverse bottom members 15a and 15.

The rear longitudinal wall 12 comprises three horizontal rods or wires 16a, and three uprights 16. The previous description of the structure of front longitudinal wall 13 applies, since walls 13 and 14 are identical. The drawings are of an actual device and to scale, so that reference is made thereto for further disclosure.

The bottom wires 23a and 16a are in the same horizontal plane, which is above the bottom of the outer container Ca.

The uprights 18 and 16 of the front and rear walls 13 and 12 are arranged in transversely aligned pairs, and the uprights 19 and 17 of the side walls 11 and 10 are arranged in longitudinally aligned pairs. Each rod or wire 23a is in the same horizontal plane as a respective rod or wire 16a, and the rods or wires 19a and 17a are in the same horizontal plane.

In the first embodiment, the bottom wall 14 comprises five longitudinal rods or wires 23, and three transverse wires 21a. Each transverse wire 21a has a pivot loop 24 at its front end, which turnably engages the bottom wire 23a of the front wall 13. Said bottom wire 23a may be slightly reduced at each hinge or pivot 24, so that the loops 24 cannot shift longitudinally on bottom wire 23a. At its rear end, each transverse wire 21a has a bent end 21 in the first embodiment. The free end-portion of each wire 21a abuts the bottom wire 16a in the first embodiment, in the position of bottom wall 14 of Fig. 1, with the bent ends 21 extending below bottom wire 16a.

When the bottom wall 14 is horizontally located as shown in Fig. 1, the outer container is held against collapsing, because the transverse wires 21a are held against substantial horizontal longitudinal shifting by the uprights 16 of the rear longitudinal wall 12 and by the loop-extension of the bottom rod 16a which wholly and loosely embraces the end-upright or vertical leg 10b; this is clearly illustrated in Fig. 2 at the right hand end of the figure. Hence, although the bottom is of less length than the internal length of the walls 12 and 13, it is held against material shifting movement lengthwise of such walls when the assembly is in its set-up or erect position, being held by both such walls. When the bottom is shifted to the collapsed position, the ends 21 are released from such position, but the condition remains with respect to wall 13, the bottom and the lower rod of wall 13 cooperat-

ing in both set-up and collapsed conditions in producing this result.

The uprights 19, 18, 17, and 16 have top parts which extend above the top members 23a and 16a of the respective longitudinal walls 13 and 12, and the top portion of each said upright 19, 18, 17, and 16 is bent or otherwise shaped to provide double thickness and a blunt end, like a ball or the like.

A flexible inner bag or receptacle C, made of flexible cloth or the like, has eyelets H, by means of which said bag C can be supported on the top parts of the uprights 19, 18, 17, and 16, which project above the top members of the up-standing walls. The bottom of bag C may be supported on the wires or rods 23, or it may be located above said wires or rods 23.

In order to collapse the outer container, it is merely necessary to turn the bottom wall 14 upwardly to the broken line position which is shown in Fig. 3. Each side wall 11 and 10 is then freely turnable around a vertical axis relative to the longitudinal walls 13 and 12. The width of bottom wall 14 preferably exceeds the height of the upstanding walls.

In the modification shown in Figs. 8 and 9, the bent ends 21 of the bottom transverse wires 21a are omitted.

In this second embodiment, the bottom wire 16a of the rear wall 12 is provided with an up-standing detent 50, which is generally of inverted U-shape. This detent 50 has a horizontal leg, and it has two vertical legs which are fixed to bottom wire 16a. This detent 50 is vertical.

When the bottom wall 14 is forced into its operative horizontal position, the detent 50 is located between the two intermediate transverse wires 21a. That is, Fig. 8 shows that the single intermediate wire 21a of the first embodiment is replaced by two intermediate wires 21a.

The vertical legs of detent 50 abut or are very close to the proximate faces of said intermediate wires 21a, when wall 14 is in its operative horizontal position.

This locks the outer container against collapsing, and it also prevents longitudinal horizontal shifting of the wall 14. It is advantageous to omit the projecting bent ends 21, so that all the parts of the outer container are free from projecting, pointed parts.

As with the first form the bottom wall of the modification is of less length than the internal length of the walls 12 and 13. However, the cooperating means between the bottom and such walls is changed to some extent from that shown in Fig. 2. As indicated in Fig. 8, the outer transverse rods of the bottom are both positioned on the outer side of vertical rods 18 so that the latter are actually located between such end rods and will, therefore, prevent shifting of the bottom wall longitudinally of wall 13 at all times, detent 50 being operative to prevent shift relative to wall 12 when the assemblage is in its set-up condition, it being obvious that in both forms it is necessary to release wall 12 from such holding conditions when the assemblage is to be collapsed, since wall 12 must move with the ends during the collapsing movements.

Each of the five walls 13, 12, 11, 10 and 14 is a skeleton wall, each of which comprises a plurality of connected metal members. The vertical walls 13, 12, 11 and 10 are turnably connected to each other at their respective common vertical edges, at which the uprights 14b, 14a, 10b, and 10a are located. At each said respec-

tive common vertical edge, the vertical walls are arranged in respective pairs. At each said common edge, one of each respective pair of adjacent vertical walls is provided with a respective upright, which is turnably embraced by loops which are provided at the ends of metal members of the other vertical wall of the respective pair. These vertical walls are interlocked against vertical movement relative to each other. These loops are sufficiently loose and said metal members are sufficiently thin, so that the container can be collapsed to substantially flat condition.

I claim:

1. An open-top crate of skeleton type for removably supporting laundry bags and the like with the positioned bag having its top in completely open position, said crate comprising complete opposing end walls of skeleton type, opposing side walls formed of individual and parallel strands of wire in spaced relation on each side and with each wire having its end zones looped respectively to vertical members of the adjacent end walls to thereby form a body assemblage of ends and sides in articulated relation with the assemblage collapsible by movement of at least three of the four walls relative to such member of the fourth wall and in the direction of length of the wire strands of the side walls to bring the assemblage into a collapsed position in which an end wall and an adjacent side wall extend in approximate alignment and in approximate parallelism with the similarly approximately aligned remaining end and side walls, and a bottom wall of skeleton type and of less length than the side walls, said bottom wall being hingedly carried by the lower wire strand of one of the side walls and removably supported by the corresponding wire strand of the opposite side wall for maintaining the service formation of the assemblage, said bottom wall being swingable about the hingedly connected first lower wire strand of a side wall to a position approximately parallel with the side wall carrying such wire strand and thereby releasing such body for its articulating movements relative to the side wall bearing such first wire to produce the collapsed parallel relationship with the bottom wall positioned in a plane extending internal of the collapsed assemblage, said bottom wall and one of the side walls having cooperating means for preventing material shifting movements of the bottom wall longitudinally relative to the side wall with which it is pivotally connected, each of the side and end walls of the body carrying vertically extending rods projecting above the top plane of such frames with the projecting portions of the rods forming supports for the laundry bag when the assemblage is in service.

2. An assemblage as in claim 1 characterized in that the bottom wall includes a pair of parallel transverse rods in spaced relation intermediate the end transverse rods of the bottom, and further characterized in that the lower wire strand of the side wall opposite that to which the transverse rods are hingedly connected carries an upstanding wire member of inverted U-shape form with its legs spaced to approximately fit between such intermediate transverse rods to thereby restrict the bottom against longitudinal movement while the bottom is in service position and during movements to and from such position within the zone represented by the depth of the U-shape member, the transverse end rods of the

bottom wall being positioned in proximity to such vertically extending rods of the side wall to which the bottom wall is hinged with the end rods outside the vertical rods.

3. An assemblage as in claim 1 characterized in that the overall width of the bottom wall is greater than the vertical height of the side walls of the body of the assemblage, with the excess of the bottom wall width projecting above the top plane of the side walls and through the open top when the assemblage is in its collapsed condition.

4. An assemblage as in claim 1 characterized in that the end walls each include a border member of endless and angular type having opposing vertical portions with which the wire strands of the side walls are articulated, and further characterized in that the bottom wall includes a pair of rods extending transversely at the ends of the bottom wall with at least one intermediate rod extending parallel with the end rods, similar ends of said rods having the hinging relation with the lower wire of one of the side walls and with the bottom wall also having a plurality of spaced wires extending in parallelism in the direction of length of the bottom wall between the outer transverse end rods, the assemblage being additionally characterized in that the vertically extending rods of the side walls include a rod carried by the respective end zones of the side wire strands, with the rods positioned in spaced relation to but in the vicinity of the vertical members of the end walls, said assemblage having its transverse rods hinged to the side lower wire strand in the vicinity of and on the same side of the neighboring side vertical rods, with one of the end rods of the bottom wall having its hinging connection with the wire strand between the adjacent vertical portion of the neighboring end wall and the adjacent vertical rod of the side wall to thereby limit the longitudinal shifting of the bottom wall to the distance between said portion and vertical rod.

5. An assemblage as in claim 4 characterized in that the endless border of each end frame includes a bottom portion in which the wire is bent upwardly toward the center of the portion at a slight angle to thereby present the corners of the body portion as having foot equivalents, the upper portion of the border having a handle formation.

MILTON SLOANE.

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