United States Patent [19]

Gilbert

[11] **3,893,648**

[45] **July 8, 1975**

[54] **BAG HOLDER**

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[73] Assignee: **TDC Inc.,** Dayton, Ohio

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[52] **U.S. Cl.** **248/97;** 248/150; 248/164; 248/166

[51] **Int. Cl.** **B65b 67/12**

[58] **Field of Search** 248/97, 98, 101, 150, 164, 248/96, 166, 188.6; 108/118, 119, 120; 150/48, 17

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Assistant Examiner—Rodney H. Bonck
Attorney, Agent, or Firm—Jerome P. Bloom

[57] **ABSTRACT**

A bag holder including a frame in part comprised of pivotally interconnected leg members of inverted U-shape. Closed ends of the leg members are uppermost and provide supports from which a bag is suspended in an open-mouthed upright position. Relative approaching and separating movements of the closed ends of the leg members collapse and open the frame. Collapsing and opening movements are used, in conjunction with an over-center spring device, to apply a yielding pressure holding the frame in a collapsed or open position to which it is set. The spring device provides a force which in response to a frame opening movement tends to lock the bag to the frame to make it in effect an integral part of the frame.

16 Claims, 5 Drawing Figures

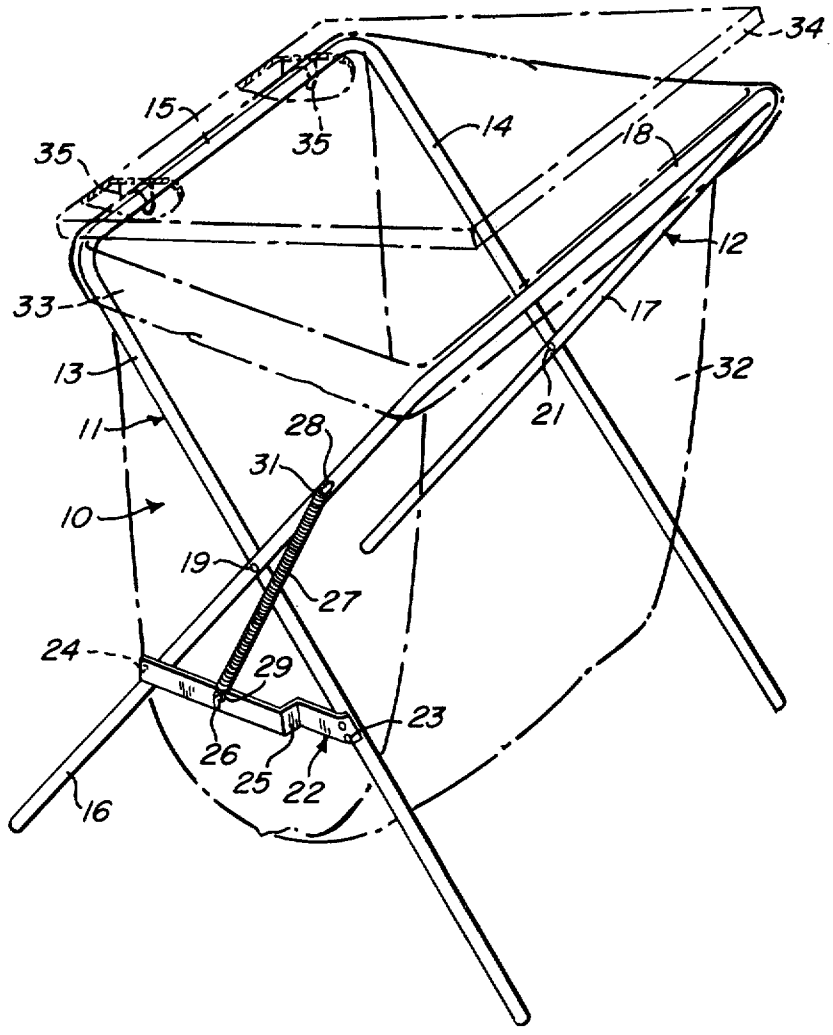


FIG-1

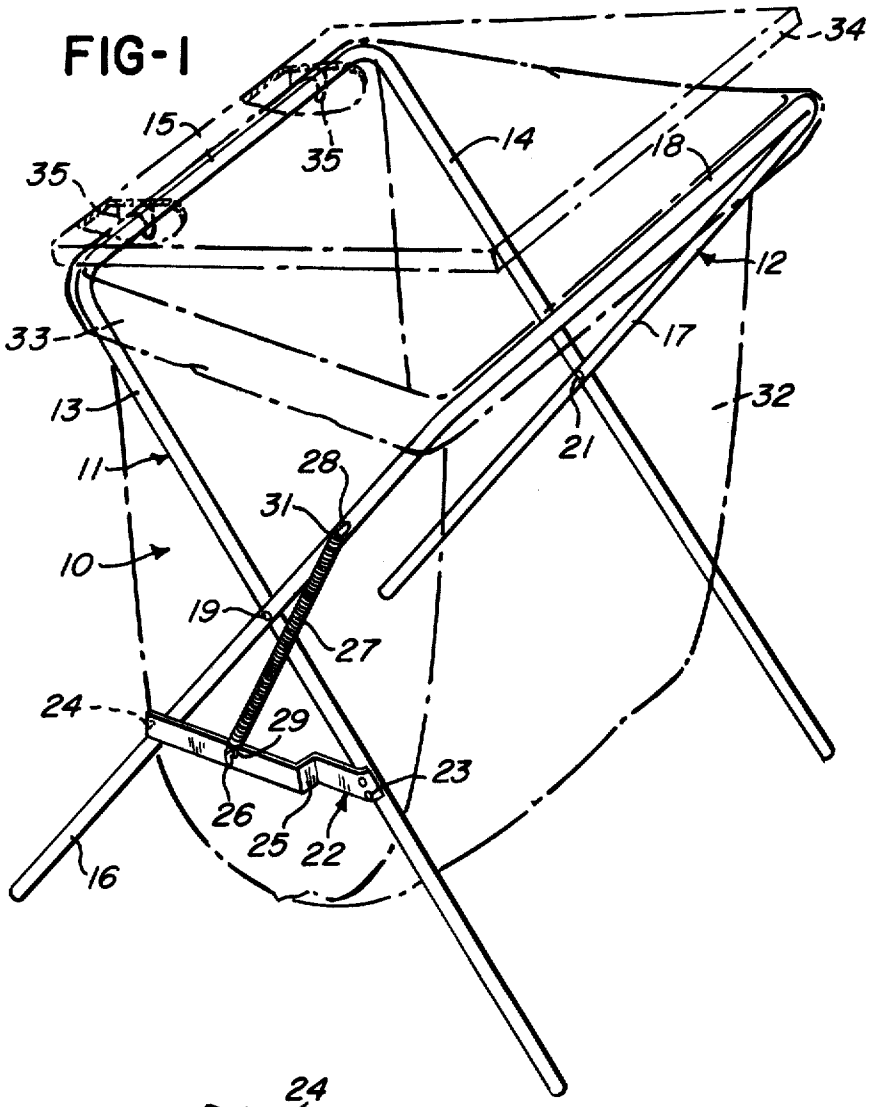


FIG-4

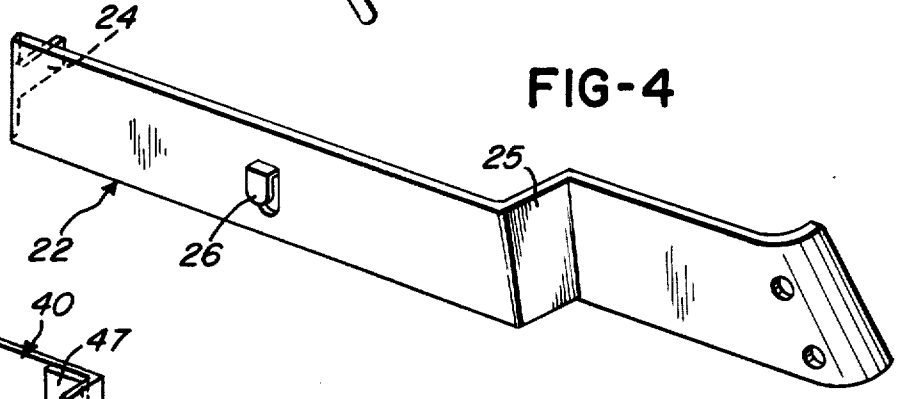


FIG-5

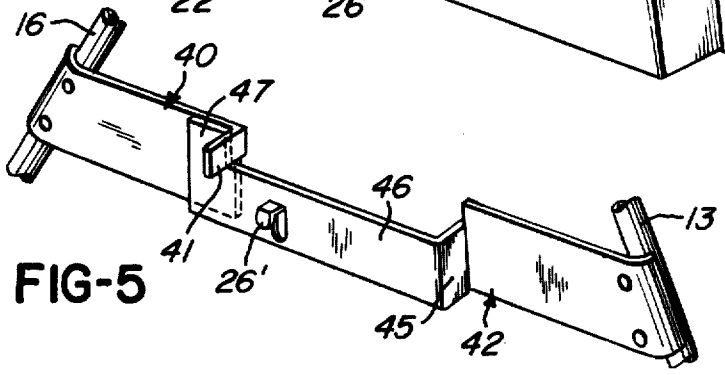


FIG-2

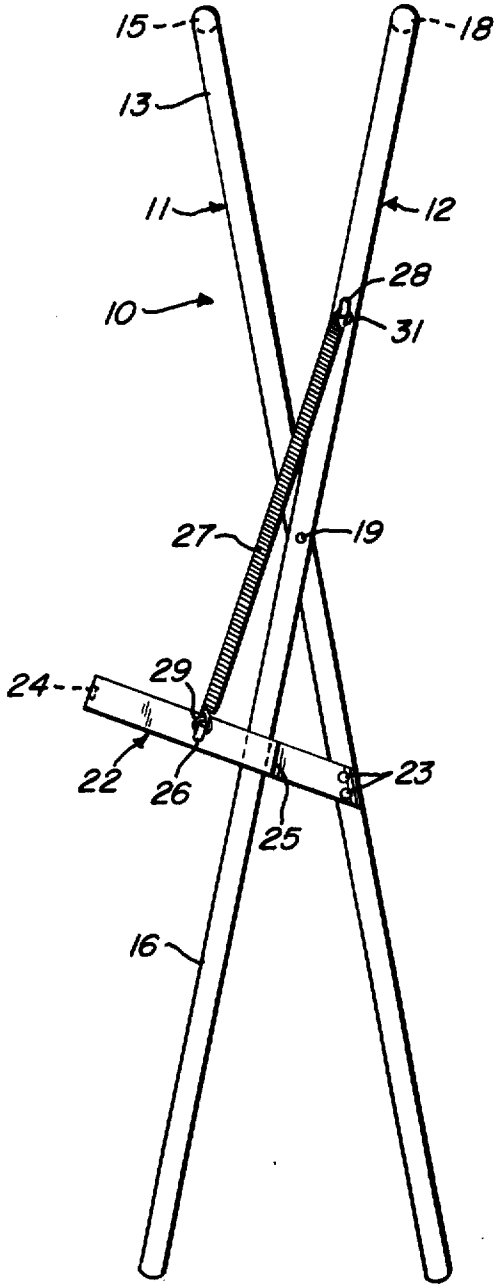
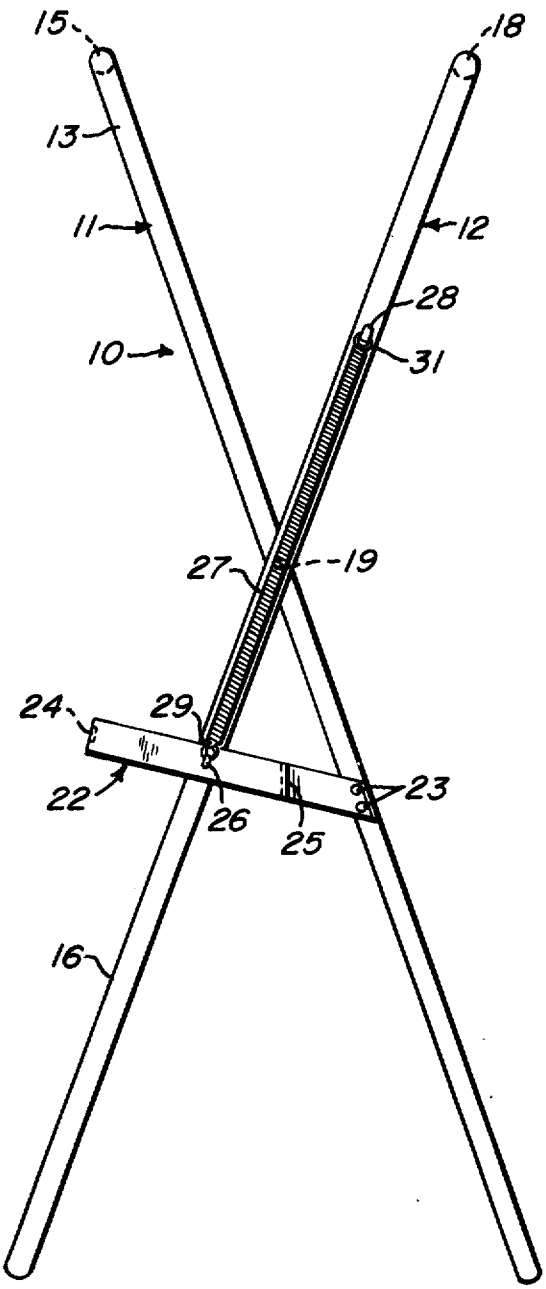

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FIG-3


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BAG HOLDER

BACKGROUND OF THE INVENTION

This invention relates to bag holders and more particularly to collapsible frame devices useful in positioning a plastic or like flexible bag for filling. Plastic and like bags, such as used to hold trash, lawn sweepings and the like are not self supporting and hence when being filled are held by hand or mounted as a liner in a rigid container. The former recourse is highly unsatisfactory as becomes quickly obvious to anyone attempting to hold a bag by hand while filling it with grass clippings and leaves. Moreover this method is inapplicable to use of a bag as a semi-permanently set-up receptacle, as for household use, at camp grounds and the like. Mounting a bag as a liner in a rigid container reduces holding problems but adds to handling difficulties and the composite results in increased weight and decreased portability, which is highly disadvantageous for temporary installations. Moreover, no mounting or suspending technique heretofore known has effectively integrated a bag with its container so that slipping, shifting or dislodging of the bag will not and cannot occur. The foregoing has limited the benefits of the versatile and increasingly popular plastic bag now available for use in trash disposal.

SUMMARY OF THE INVENTION

The present invention provides a simple, lightweight and inexpensive holder for bags, having particular though not limited reference to expendable plastic and paper bags. The holder includes a frame comprised in the main of a pair of inverted U-shaped members, the legs of which are crossed and pivotally interconnected at opposite ends of the frame so that the frame can adjust between open and collapsed positions while retaining a connected relation of its parts. The closed ends of the legs position uppermost and act as elevated supports over which the peripheral mouth portion of a flexible bag is folded and placed under tension. The bag becomes suspended thereby in an openmouthed upright position.

Pivots forming the connections between the crossed legs are intermediately located and transversely aligned. In a preferred embodiment of the invention an arm positioned to one side of the frame is secured to one crossed leg to extend toward the other at a location spaced below the level of the pivot connections between the legs. Abutment means provided on this arm limit relatively approaching and separating movements of the legs and so define the fully open and collapsed conditions of the frame. A tension spring anchored at one end to the arm in a laterally offset relation to the leg to which the arm is secured extends upwardly through and beyond the plane of the described pivot connections to attach at its other end to the other crossed leg. The arrangement is one to create an overcenter spring device wherein adjustment of the frame between its opened and closed positions shifts the spring from side to side of a center position as represented by the described pivot connections. The frame is, as a result, yieldingly urged to maintain either adjusted position to which it may be set. In the presence of an installed bag, suspended from the elevated leg support portions, opening motion of the frame utilizes the applied spring pressure to grip the bag, effectively locking it to the frame. Bag and frame become an integrated assembly readily handled and moved about as a unit. The frame may, in this connection, be made of lightweight tubular metal or the like. Wheels or casters may be mounted to its legs at their lower ends.

The spring anchoring arm has, as noted, abutment means thereon defining fully open and collapsed positions of the holder frame. In accordance with a feature of this aspect of the invention, closing movement of the frame is limited so that even in a collapsed position the frame may be left in a free standing, stable position.

To mention some, but not all, uses of the bag and holder assembly it can serve, for example, as an indoor or outdoor trash container, or as a laundry basket. It lends itself to use as a collection point to which household trash containers can be brought for emptying. Its portability and ease of erection makes it particularly useful as a trash receptacle to be brought to picnics, camp grounds or the like, and, of course, it has obvious advantages in the collecting and bagging of grass clippings and other lawn debris.

An object of the invention is to provide a simple and inexpensive bag holder lending itself, in conjunction with a held bag, as a receptacle of general utility.

Another object of the invention is to provide a bag holder collapsible for easy storage and portability.

A further object of the invention is to provide a bag holder in which integrated spring means yieldingly maintains the holder in set positions.

Still another object of the invention is to provide a bag holder in which spring pressure applied to establish the holder in open position is utilized, in the presence of an installed bag, to effectively lock the bag to the holder.

A still further object of the invention is to provide a bag holder controlled in its adjustment to open and collapsed positions, the holder in a collapsed position retaining a free standing capability.

With the above and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation as hereinafter described or illustrated in the accompanying drawings, or their equivalents.

Referring to the accompanying drawings wherein is shown one but obviously not necessarily the only form of embodiment of the invention,

FIG. **1** is a view in perspective of a bag holder in accordance with the illustrated embodiment of the invention, the holder being shown in an open position, the presence in connection therewith of a held bag being indicated in broken lines;

FIG. **2** is a view in end elevation of the bag holder of FIG. **1**, shown adjusted to a collapsed position;

FIG. **3** is a fragmentary view of the holder in end elevation showing the parts in an intermediate or neutral position;

FIG. **4** is a perspective view of the control arm utilized in the preferred embodiment of the invention here illustrated; and

FIG. **5** is a perspective view illustrating a modification of the structure of FIG. **4** in a preferred embodiment of the invention.

Referring to the drawings, a bag holder in accordance with the illustrated embodiment of the invention consists principally of a frame **10** comprised in part of crossed leg members **11** and **12**. The leg members **11**

and 12 are substantially identical in construction. Each has a U-shaped configuration and may be made of any suitable material, preferably one having a good strength to weight ratio, as for example a lightweight tubular metal. The leg member 11 accordingly is composed of parallel legs 13 and 14 united at their one ends by a bridging or joining portion 15. Leg member 12 similarly is composed of parallel legs 16 and 17 joined at their one ends by a bridging portion 18.

In a normal attitude, the leg members 11 and 12 dispose with bridging portions 15 and 18 uppermost so that they are effectively inverted. The parallel legs of the respective inverted U-shape members are, moreover, in a crossing relation so that in end elevation the frame assumes a X-like configuration. Where adjacent legs 13 and 16 intersect one another they are pivotally interconnected by a pin 19 installed in aligning leg openings (not shown). Where legs 14 and 17 intersect one another they are pivotally interconnected by a pin 21 installed in the same manner as pin 19. The leg members 11 and 12 are thus connected to form a unitary assembly and at the same time are capable of relative rocking movements effecting relative approaching and separating movements of opposite ends of the leg members. As will hereinafter more clearly appear, the frame is essentially adjustable between an open position as shown in FIG. 1, wherein uppermost positions 15 and 18 are widely separated from one another and a collapsed position as shown in FIG. 2 wherein the bridging portions are in a more nearly adjacent position. Lower ends of the leg members are in an open position of the frame relatively widely separated and provide a stable, free standing mount of the frame or bag holder on the ground or other supporting surface. In a collapsed position, the lower ends of the leg members are brought to a closer but still spaced relation to maintain a free standing capability.

The following description is referenced to the parts in an open position of the frame as seen in FIG. 1. The pivot pins 19 and 21 are in pivot locations occupying a common plane substantially below and generally parallel to the horizontal plane occupied by bridging leg portions 15 and 18. Disposing beyond or below such described pivot location is an arm 22 orienting substantially horizontally or parallel to the horizontal plane occupied by the bridging portions 15 and 18. At its one end, as shown in FIG. 4, the arm 22 is curved for a mating engagement with leg 13 of member 11 and is secured thereto, as by rivet means 23. From its place of attachment to leg 13, the arm 22 extends toward crossing leg 16 of leg member 12 and terminates in an inwardly turned tab 24 located at this point beyond and in an embracing abutting relation to leg 16. Intermediate its ends, the arm 22 is offset to form an inwardly positioning shoulder 25.

With reference to the boundaries of the frame, tab 24 and shoulder 25 are on an inner side of the arm 22, in a longitudinally spaced, substantially parallel relation to one another. Together they achieve a confining relation to leg 16, limiting its motion, and, in the process, defining open and collapsed positions of the holder frame.

About midway between its ends, on an outwardly facing side, the arm 22 is formed with a projecting tongue 26 which may be outstruck from the material of the arm. Tongue 26 serves as an anchor for one end of a tension spring 27 attaching at its other end to a tongue 28 outstruck from the material of leg 16. More particularly, the spring 27 terminates in a ring 29 hooked over tongue 26 and terminates at its other end in a ring 31 hooked over the tongue 28. Lower anchor tongue 26 positions between the legs 13 and 16, in the open position of the frame, at a level below the pivot pin 19. Another tongue 28 positions above pivot pin 19 and to the same side thereof at which arm 22 is fixed to leg 13. When attached to its opposite anchor locations, the spring 27 is stressed and attempts continuously to restore itself to a shorter length, unstressed condition, exerting in the process a pulling effort at anchor locations 26 and 28. It will be evident that the spring device as illustrated and described is an over-center device capable of being shifted from side to side of the pivot pin 19, and, in so doing, to change the effective pressure applied within the frame 10. Thus, spring 27 effectively connects the leg members 11 and 12, and, in the position of the parts as shown in FIG. 1, applies a yielding force tending to separate the legs, or more particularly bridging portions 15 and 18. In the event, however, of bridging portions 15 and 18 being forced manually into a relatively approaching motion, the spring anchors 26 and 28 are carried laterally relative to pivot location 19, causing the spring 27 to move to a neutral position as shown in FIG. 3 and then through and beyond neutral position to a position in which the spring is displaced to the other side of the pivot location or to the left side thereof as viewed in the drawings. When this occurs the effective pressure applied by the spring within the frame is reversed and is accordingly now directed in a manner to urge a relative approaching motion of the bridging portions 15 and 18, moving the parts toward a collapsed position substantially as shown in FIG. 2. The parts can if desired be allowed to remain in the neutral position of FIG. 3, which may be defined as a position in which spring 27 imparts no rotational torque to either leg member and is established by virtue of a co-linear relationship between the spring anchors 26 and 28 and pivot pin 19.

In the use of the bag support, the frame is placed in a collapsed position as shown in FIG. 2 or in a neutral position as shown in FIG. 3. A plastic or like bag 32 is then inserted between the leg members and allowed to assume a generally upright position within the frame with its closed end down and its mouth opening upwardly. Peripheral edges of the mouth then are folded over the bridging portions 15 and 18 of the leg members to form an overlap 33. The leg members are then moved toward open position, against the urging of spring 27, until the shifting movement of the spring carries it bodily to and through the pivot location of pin 19. At this moment, the direction of effective applied pressure is reversed and the spring 27 becomes operative to urge a separating motion of the bridging portions 15 and 18, that is, to urge a movement of the frame toward open position. This movement continues until limited by resistance of the bag itself or until positively stopped by engagement of the bent over portion 24 of arm 22 with leg 16. According to a feature of the invention, the parts are so constructed and arranged in connection with standard bag sizes that the bridging portions 15 and 18 will encounter and become subject to the resistance of the bag immediately prior to the point at which abutment portion 24 engages arm 16. Spring pressure accordingly is applied in a manner to grip the bag to the upper portions of leg members 11

and 12, making the bag in effect an integral part of the frame. The spring alone will exert an initial pressure sufficient to lock the bag securely in position. In the case of a plastic bag, the locking effect is accentuated due to inherent stretch of the bag material. As weight is added to the bag, the downward force imparted through the bag to the upper portions of the leg members causes an increased locking force proportional to the amount of weight in the bag. The positive limit enforced by the abutment means 24 obviates excessive stretch in the bag and assures that the holder will always occupy a stable upright position substantially as shown in FIG. 1.

By virtue of the structure provided, the frame will not collapse, even if adjusted to an open position, with no bag in place.

In the removal of a filled bag, upper portions of the leg members are pushed in a relative approaching sense until the gripping pressure applied to the peripheral mouth portion of the bag is released, whereupon the bag may be conveniently separated from the holder.

Once the bag is removed and such approaching motion is continued until spring member 27 moves through and beyond its neutral position, the applied spring pressure is reversed in direction and the frame urged yieldingly to a collapsed condition. This motion of the parts in the sense is allowed to continue until the leg 16 engages and is limited as to its movement by abutment with the shoulder 25 on arm 22. The respective shoulders 24 and 25 may be regarded as defining and enforcing the limits of the fully open and fully collapsed conditions of the frame. In its fully collapsed condition, as shown in FIG. 2, the leg members retain a separation at their lower ends sufficient, if desired, for the frame to stand freely in a self supporting manner. The frame is at all times, therefore, in proper condition for the installation of a bag and need not itself be held or supported while the bag is put in place.

In a collapsed position, the bag holder is adapted for ready storage and to be carried or otherwise transported to a selected place for use. The addition of casters or wheels to the leg members 11 and 12, at their lower ends, will impart mobility to the holder. A tube or box for the storage of expendable bags can be mounted anywhere on the frame.

As seen in FIG. 1 of the drawings, a flat, cap-like, lid 34 can be applied to bridge and cover the open mouth of an installed bag by placing it to overlie support portions represented by the frame portions 15 and 18. The lid 34 embodies, adjacent one side at the interior thereof, a pair of longitudinally spaced flexible brackets 35. The brackets 35 have arcuate generally C-shaped recesses opening downwardly to provide slightly curved dependent legs which flexibly accommodate and clamp about the frame portion 15 of the member 11 to contain thereto the overlapped portion of the bag 32. The configuration of the brackets 35 thus provided is such they have a snap mount and the recesses provided thereby afford a loose pivot of the lid enabling it to be readily moved to bridge the open mouth of the bag and to depend over and about frame portion 18 or be moved upwardly therefrom. It will be obvious of course that the lid may simply be a cap which can be disposed over the open mouth of the bag to be supported by the frame portions 15 and 18 therebelow.

FIG. 5 of the drawings shows a modification of the structure of FIGS. 1 through 4 where the only change is that the arm 22 is replaced by a pair of arm elements 40 and 42 which in the open position of the bag holder frame will similarly dispose. In such position the arm element 40, which is a flat plate-like element fixed at one end to the leg 16, will horizontally project in the direction of the leg 13, at a level below the pivot 19. At its projected extremity the arm element 40 includes, at its upper edge, a right angled outwardly directed tab constituting a limit or stop member 41. In the open position of the frame the arm element 42, which is fixed at one end to the leg 13, also projects horizontally, on the same level with and in the direction of the leg 16. The arm 42 has a plate-like form but is offset intermediate its ends to form a shoulder 45 of a like nature and facing similarly to the shoulder 25 in the arm 22. The projected end portion 46 of the arm 42 beyond the shoulder 45 will lie in a plane outwardly of the arm 40 but within the limits of the stop member 41. The arm portion 46 is formed to provide a rectangular recess in its upper edge to define a right angled, upwardly directed, hook element 47 at its projected extremity, which hook element in the open position of the frame, as seen in FIGS. 1 and 5 of the drawings, interengages with the stop member 41 on the arm element 40. The arm element 42 embodies an outstruck portion defining a tongue 26' identical with and serving the same purpose as tongue 26 on the arm 22.

It will be seen from FIG. 5 of the drawings that with the frame structure of the invention in its open bag supporting position that the arm elements 40 and 42 will occupy positions wherein one forms an extension of the other so as to interrelate and function as does the arm 22. In this position the hook extremity 47 of the arm 42 and the stop member 41 of the arm element 40 are arranged to limit against each other to prevent an overloading of the bag 32 from collapsing the supporting frame work.

It will be seen that spring 27 will in this embodiment of the invention be anchored at its lower end to tongue 26' to position as in the first described embodiment of the invention and in a location spaced similarly from the leg 13. The spring 27 will therefore function as first described in all respects, except that it will move in accordance with the movements of the arm element 42.

Accordingly, it may be seen the only difference in the modification of FIG. 5 is that the single arm 22 is replaced by a two-piece structure, the arm elements of which swing upwardly and in crossing relation as the frame is moved to a collapsed position. The arrangement of the arms 40 and 42 and their configuration dictate that as the legs 13 and 16 approach each other arm 40 passes above shoulder 45 on arm 42 while leg 16 will move in a path to abut the shoulder 45 on arm 42 in the same manner as previously described with respect to the abutment of leg 16 with shoulder 25 on arm 22. This last will limit the approaching motion of the legs and insure that the frame can and will remain stable and upright, even in a so-called collapsed position. It will be further obvious that due to the fixed relation of the arm elements 40 and 42 and their relative configurations that they will move in adjacent cooperating relation as described throughout the approaching and separating movements of the frame portions 11 and 12.

In referring to a collapsed condition or position of the bag holder, it will be understood that reference is made to a condition wherein the leg portions of the frame are brought more closely together to facilitate storage or

transport, as well as to facilitate application of a bag. In such collapsed condition, as represented in FIG. 2, the preferred embodiment of the invention contemplates a free standing capability of the holder.

Note should be particularly taken that in the preferred embodiment illustrated the leg members **11** and **12** can be made substantially identical and connected to position in a nested, adjacent, offset relation rather than fitting one within the other. This is advantageous in the fitting of the bag **32** and enables that the stress on the bag in the open position is more uniformly applied. Of course, the advantage of a frame structure such as and for purposes as described is enhanced by the unique controls and limitations afforded by the relation of the arm **22** or the cooperative arm elements **40** and **42** to the frame legs and the spring **27.**

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise but one of several modes of putting the invention into effect and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

What is claimed is:

1. A bag holding device including a frame to mount a bag-like element in an opened condition and in a selected attitude of suspension, said frame including leg portions having means defining a point of their interconnection for pivoting of one relative another and adjustment thereof between open and collapsed positions, means for limiting said leg portions in their movement toward an open position, and an over-center spring device attached at one end to one of said leg portions and at the other end to said limiting means and shifting from side to side of said point of interconnection in response to opening and collapsing movements of said leg portions to apply alternatively a yielding pressure to hold said leg portions in an open position and a yielding pressure to hold said leg portions in a collapsed position.

2. A bag holding device according to claim **1,** characterized by means on said limiting means limiting movement of said leg portions toward a collapsed position.

3. A bag holding device including a frame to mount a bag-like element in an opened condition and in a selected attitude of suspension, said frame providing pivotally interconnected leg portions adjustable between open and collapsed positions and including at least a pair of crossed legs interconnected at a point intermediate their ends, and means for releasably applying a pressure to make said frame and a mounted bag-like element a unitized receptacle assembly, said means for releasably applying a pressure including an overcenter spring device, laterally extending means on one of said legs providing a place of attachment for an end of said spring device with respect to said one leg, which attachment is below the interconnection between said legs, and another end of said spring device attaching to the other of said legs above said interconnection, said spring device being shiftable relatively to said point of interconnection of said crossed legs to apply alternatively a yielding pressure to hold said leg portions in an open position and a yielding pressure to hold said leg portions in a collapsed position.

4. A bag holding device according to claim **3** wherein said leg portions move in relative approaching and separating motions in an adjustment of said frame to respective collapsed and open positions, and means provide that a predetermined extent of said approaching and separating motions shift said spring device from side to side of said intermediate point.

5. A bag holding device according to claim **4** wherein said laterally extending means is an arm extending from said one leg toward the other and characterized by means on said arm limiting relative approaching and separating motions of said leg portions.

6. A bag holding device according to claim **5** wherein said pivotally interconnected leg portions are comprised of leg members each of which have spaced apart legs interconnected at upwardly, disposed ends thereof, and corresponding legs of said members being pivotally interconnected to one another to enable correspondingly upwardly, disposed ends to move in relative approaching and separating motions, said leg members forming said frame with pivotal connections being established at opposite ends of the frame, said arm extending in bridging relation to corresponding legs at one end of said frame.

7. A bag holding device according to claim **6** wherein said leg members each have an inverted U-shape, closed ends thereof being uppermost and forming elevated supports over which a peripheral mouth portion of a bag may be folded for suspension of the bag within said frame, said spring device being arranged in one set position of adjustment to apply a pressure to spread said supports apart to thereby grip the peripheral mouth portion of said bag and maintain the same open.

8. A bag holding device according to claim **5** wherein said motion limiting means on said arm cooperates with said legs to insure a free standing, stable position of the frame in either an open or collapsed position of the leg portions thereof.

9. A bag holding device including a frame to mount a bag-like element in an opened condition and in a selected attitude of suspension, said frame including pivotally interconnecting leg portions adjustable between open and collapsed positions, and means for releasably applying a pressure to make said frame and a mounted bag-like element a unitized receptacle assembly, said means for releasably applying a pressure including spring means shiftable to apply a yielding pressure to hold said leg portions selectively in an open position or a collapsed position when so placed, laterally extending means connected with at least one of said leg portions providing a place of attachment for a portion of said spring means which is below the level of the interconnection between said leg portions, another of said leg portions providing an attachment for another portion of said spring means at a location which is above the level of said interconnection.

10. Apparatus as in claim **9** wherein said laterally extending means bridge a pair of pivotally interconnected legs of said frame to be substantially horizontally disposed when said leg portions are in the open position.

11. Apparatus as in claim 9 wherein said laterally extending means comprises an arm element fixed to one of said legs to extend therefrom to the other of said pair of legs.

12. Apparatus as in claim 11 characterized by said arm element having a configuration and arrangement to provide thereon longitudinally spaced stops intermediately of which the other of said pair of pivotally interconnected legs may move from an open to a collapsed position.

13. Apparatus as in claim 11 characterized by said arm element having a plate-like form offset intermediate its extremities to provide one stop element and means projected laterally thereof adjacent its projected extremity to provide another stop portion, said stop portions determining the limits of movement of said leg portions.

14. Apparatus as in claim 13 characterized by the place of attachment for the first said portion of said spring means being provided by means in connection with said arm element intermediate said stop portions.

15. Apparatus as in claim 9 wherein said laterally extending means includes two arm elements respectively connected at their remote extremities to an adjacent pivotally interconnected pair of legs of said frame, said arm elements having interrelated portions providing stops limiting the approaching and separating motions of said leg portions.

16. Apparatus as in claim 15 characterized by each of said arm elements having hook-like projected extremities which interrelate to define a limit for a separating of the pivotally interconnected legs and one of said arm elements having an offset providing a stop for limiting the approaching movement of the other of said arm elements.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,893,648

DATED : July 8, 1975

INVENTOR(S) : Robert B. Gilbert

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 1, line 59, "opened" is corrected to read -- open --.

Col. 3, line 27, "positions" is corrected to read -- portions --.

Col. 4, line 7, "other" is corrected to read -- -chor --.

Col. 5, line 27, "the" (second occurrence) is corrected to read -- this --.

Signed and Sealed this

twenty-first Day of *October 1975*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks