April 23, 1957 B. MILLER 2,789,781

BAGS WITH DETACHABLE SUSPENSION AND CLOSURE DEVICES

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Fig. 1.

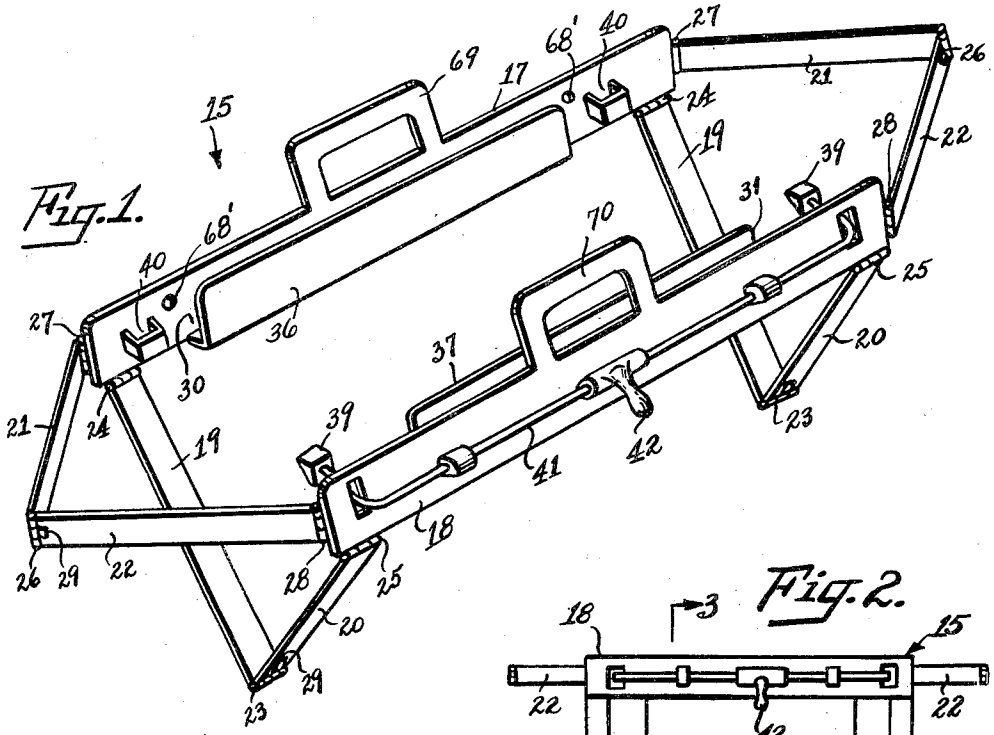


Fig. 2.

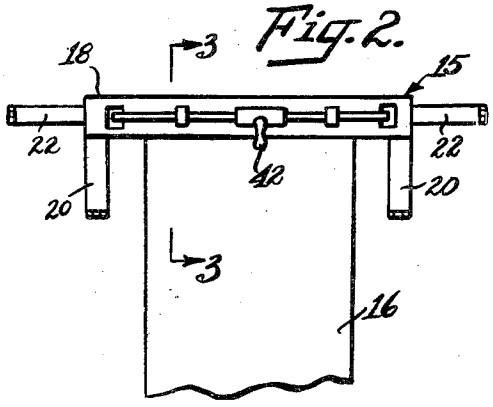


Fig. 3.

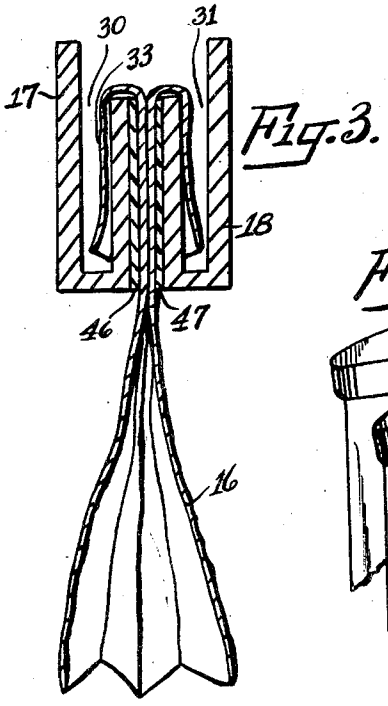
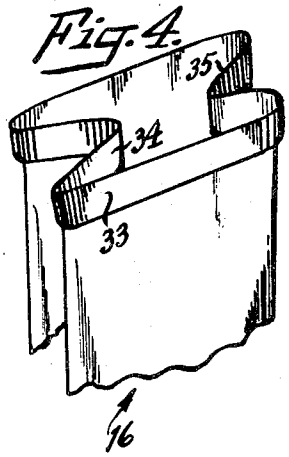


Fig. 4.



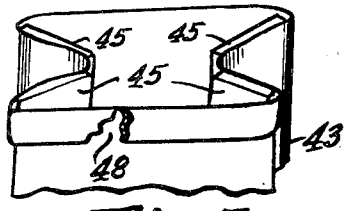


Fig. 5.

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Fig. 6.

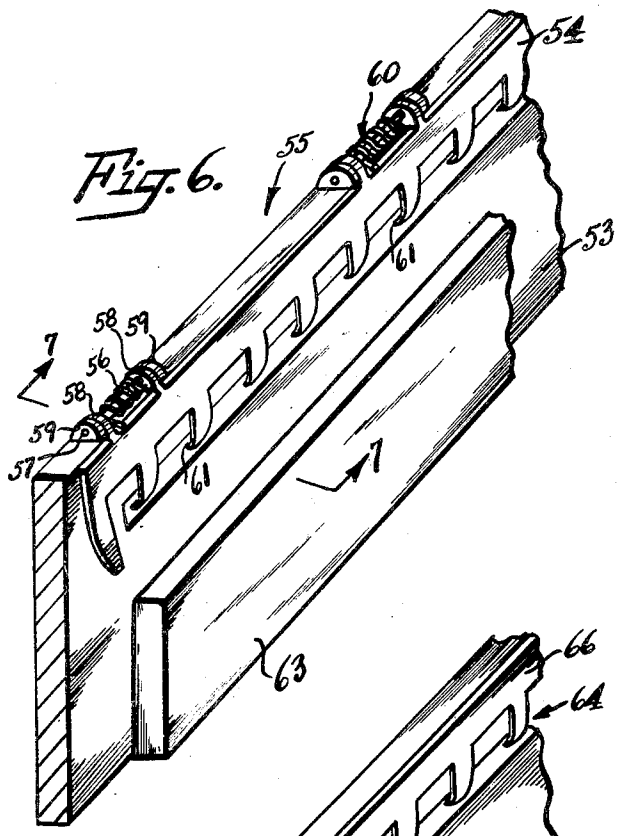
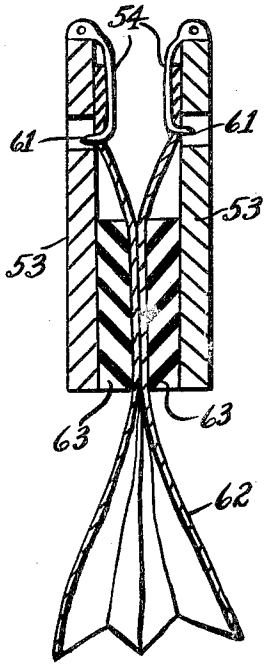


Fig. 7.



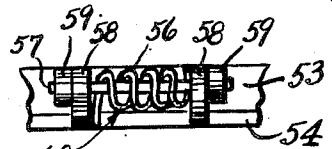


Fig. 9.

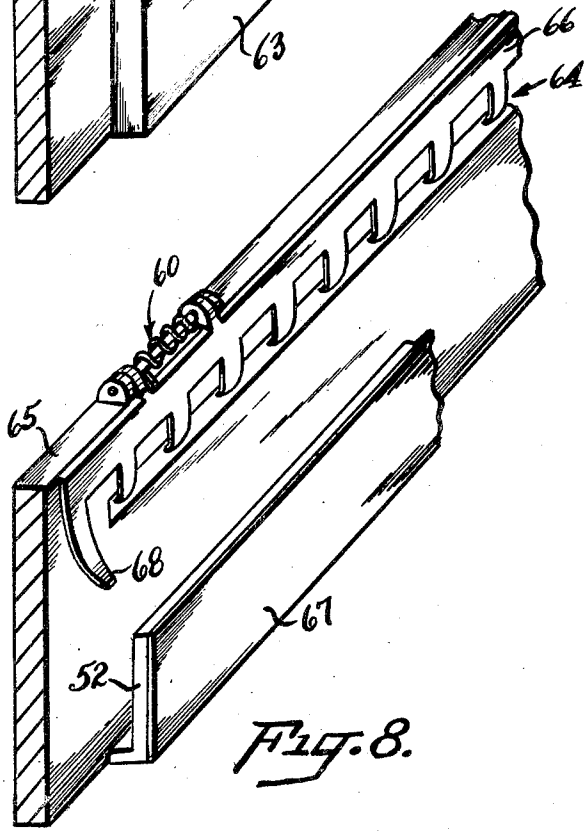


Fig. 8.

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United States Patent Office 2,789,781 Patented Apr. 23, 1957

2,789,781

BAGS WITH DETACHABLE SUSPENSION AND CLOSURE DEVICES

Benjamin Miller, New York, N. Y.

Application March 11, 1955, Serial No. 493,622

11 Claims. (Cl. 248—100)

The present invention relates to bags with suspension and closure devices.

An object of this invention is to provide a novel and improved device of the character mentioned, affording a frame to be detachably mounted on the mouth rim of a bag; such a frame being manipulable to open and close the bag.

Another object hereof is to provide a device of the type set forth, of novel and improved construction, wherein, regardless of the extent to which the bag is opened, its mouth rim edges will always be in a single plane, such as a horizontal plane and one set of opposite sides of the bag will remain always parallel to each other at their top edges. Also, the opening and closing of the bag shall always be in rectangular fashion with no possibility that the bag shall assume an askew position, regardless of the extent to which it is opened.

Another object hereof is to provide a device of the type described, of novel and improved construction, affording practically hermetic closure of the bag.

A further object hereof is to provide a novel and improved device of the class set forth, which can be hung upon a wall or other place for use as a refuse container or the frame may be provided with suitable handles for use in hand-bag manner.

Another object is to provide a novel and improved device of the nature set forth, affording a frame for use with expandable paper bags.

Still another object of this invention is to provide a novel and improved device of the character set forth, which is reasonably cheap to manufacture, easy to use and efficient in carrying out the purposes for which it is designed.

Other objects and advantages will become apparent as this disclosure proceeds.

In the preferred embodiment of this invention, I provide a frame including a pair of elongated horizontally positioned members and use a paper bag of the type which can be compressed flat when empty and which has expandable side gussets. These frame members are along one another and have means to attach the mouth or rim region of the bag thereto so that it is removable from such frame. Linkages are associated with said frame members so that they may be separated or brought together to open and close the bag. Said elongated members are prevented from any longitudinal movement with respect to each other, so that the mouth of the bag will open and close rectangularly.

I prefer to provide that no dead center shall exist in the linkages so that the frame always closes easily. Similarly, I provide that the side gussets of the bag be not permitted to assume a completely open condition, so that they shall always close correctly along their proper folds. In addition, I prefer to provide that the side gussets, when completely closed and compressed at the rim or mouth of the bag, shall come almost together, so that better hermetic closure of the bag may be attained. Also I provide that when the frame is suspended, it may

be easily opened and closed with the use of only one hand. Finally, I provide special modifications of ordinary paper bags, adapted for the practice of this invention. Ordinary paper bags, of course, are also usable.

In the accompanying drawings forming part of this specification, similar characters of reference indicate corresponding parts in all the views.

Fig. 1 is a perspective showing of a big frame for the practice of this invention.

Fig. 2 is a front view of a bag and its suspension and closure frame of Fig. 1 associated therewith. This is a preferred embodiment of my present invention. The handles are omitted in this embodiment of the frame. Their inclusion is optional.

Fig. 3 is an enlarged section taken at lines 3—3 in Fig. 2.

Fig. 4 is a perspective fragmentary view showing an ordinary paper bag slightly modified for use with the frame of Fig. 1.

Fig. 5 is a fragmentary perspective view of another type of modified paper bag.

Fig. 6 is a fragmentary perspective view of a frame component of modified construction. A frame using a pair of bars as here shown, is adapted for detachable suspension of ordinary paper bags.

Fig. 7 is a section similar to Fig. 3, taken at lines 7—7 in Fig. 6, of a frame utilizing the structure taught in said Fig. 6. This view shows such frame in closed condition and having a bag suspended therefrom.

Fig. 8 is similar to Fig. 6, but of another modified construction, so that a frame employing such as is here shown, is adapted for detachably suspending any form of bag.

Fig. 9 is a fragmentary top plan view of a portion of either component shown in the Figs. 8 or 6.

In the drawings, the numeral 15 designates generally a frame on which a bag 16 is mounted. Said frame may be of metal, wood, plastic or other suitable materials and the bag may be of paper, plastic, fabric or other pliant sheetings. The frame illustrated in Fig. 1 is of sheet metal.

Frame 15 consists of two elongated members 17 and 18 which are of equal length. One form of linkage means for properly associating said members comprises the sets of links 19, 20, 21, 22; one such set being at each side of the frame respectively. At one of their ends, links 19 and 20 are hinged together for movement about axis 23 and their other ends are hinged respectively to corresponding ends of the members 17 and 18, at axes denoted by the numerals 24, 25 respectively. At one of their ends, links 21 and 22 are hinged together for movement about the axis 26, while their other ends are hinged respectively to the same corresponding ends of the members 17 and 18, at axes indicated by the numerals 27 and 28 respectively. The axes 23, 24, 25 are parallel and lengthwise of the members 17, 18. The axes 26, 27, 28 are parallel, and perpendicular to the direction of the axes 23, 24, 25. The lengths of the links 21 and 22 are equal. To standardize the parts for economical manufacture, all the links are made of equal length and sufficient that the bag may be almost fully opened before any hinged pair of links are in dead-center relation. It is advisable to provide stop lugs as 29 as part of the hinge structures so that associated links are stopped before they would assume dead-center relation. At maximum permitted opening of the links, the bag should be almost fully open but not entirely open, so that it would retain a disposition to close along its proper folds.

The bag 16 shown in Fig. 4 is provided with an outer cuff 33 around its mouth. The frame 15 is provided with hook means on each of the members 17 and 18,

which set into the cuff of the bag so that said bag is suspended from the frame. One form of hook means for each of said frame members, may be provided by having said members formed as upright channels **30** and **31** respectively and it is preferred that said channels shall extend between and somewhat spaced from the pairs of links **19**, **20**, each an equal distance from the adjacent ends of the frame members **17**, **18**. The sides of the bag **16** are preferably inwardly folding gussets **34**, **35** respectively, so that the bag can be folded flat and opened to rectangular prismatic form. The opposing gussets should almost meet when closed. Ordinary paper bags of this type may be used after they are fashioned with a cuff **33**. The size of the bag should be such that its width from gusset to gusset will permit snug admission of the hooks **36**, **37** into the respective cuff portions along the faces of the bag respectively. It is evident that this provision of suspension allows the bag **16** to be expanded upon opening of the frame **15** by separating the frame members **17**, **18**. The nature of the linkage is such that at all times, members **17** and **18** are opposite each other, can have no appreciable relative longitudinal movement and when one is held and the other moved with respect to the first, the moved member will have a locus of movement along a single flat plane, hence the bag will never assume as askew condition and if in use the members **17** and **18** are intended to be horizontal, the rim of the mouth of the bag will always be in one horizontal plane.

The hooks **36**, **37** in the embodiment shown in Fig. 1, are opposite each other and lie within the frame. An inherent resiliency of the sheet metal will enable sealed closure of the bag is the hooks **36**, **37** contact and are pressed together, or the opposing surfaces of said hooks **36**, **37** may be faced lengthwise with rubber stripping indicated in Fig. 3 as **46** and **47** respectively. These strips are compressed when the frame is closed and would offer good sealing of the bag **16** while the said frame **15** is maintained closed by any releasable latch means, as for instance the detents **39** on member **18** which serve to engage the frame member **17** at points **40** respectively. These detents are on a rotatably mounted rod **41** having a handle **42** for opening and locking the latch.

If desired, the bag may be as shown in Fig. 5 where an ordinary paper bag **43** having folding side gussets **44** has each ply of such gussets reinforced along bag rim or mouth edge by a comparatively rigid cardboard strip **45**. Such strips extend not quite to the fold line of the gusset they are associated with so that the bag is free to fold properly. Such relatively rigid reinforcing strips are intended to enable the bag to close properly along its normal folds even when almost fully loaded with material. In said bag **43**, the front and rear walls thereof, along the mouth rim, are each provided with a downwardly opening pocket **48**. These pockets are really cuff portions secured along the side edges of said bag and enable it to be used with the suspending hooks as **36**, **37**. The bag with the mentioned reinforcement strips **45**, but minus pockets or cuffs, could be used with a frame equipped with a clamping device; examples of such frames of modified construction, being hereinafter described.

If the members **17** and **18** of the frame **15** were changed so that each be of the structure shown in Fig. 6, any type of bag may be employed, even plain paper bags ordinary in commercial use. No cuff or parts of such are necessary in this modified frame embodiment, because the frame here offers means for clamping the rim portion of the bag onto the frame. Also to be noted, is that if said members **17** and **18** of the frame **15** were changed so that each be of the construction shown in Fig. 8, any type of bag may be used therewith, since there is provision to suspend a bag by clamping means or a bag having a cuff may be mounted on hooks **52** in manner similar as explained for the frame **15**.

In Figs. 6 and 7, each frame bar **53** carries longitudinally therealong, a clamping bar **54** in hinged relation therewith. Each clamp means **55** thus formed, is urged to closed condition by spring means which may be a tensed-in-torsion coil spring **56** about the hinge axis pin **57** of for instance the hinge means afforded by the spaced ears **58** on the clamping bar **54** and the spaced ears **59** on the frame bar **53**. The ears **58** are between the ears **59** and in contact with them respectively, while the said coil spring is between said pair of ears **58**, with its ends acting against the frame member **53** and the clamping bar **54** respectively. A plurality of such hinge means denoted generally by the numeral **60**, may be provided as design dictates. The clamping bars **54** are directly opposite each other and each is in the form of an upright comb whose teeth **61** engage the bag **62**. Such comb form permits bags of different widths to be accommodated by the frame. Below each clamping bar, the associated frame member carries a longitudinal rubber strip **63** of sufficient thickness that they contact and are in compression when the frame is closed. Thus, the bag **62** is practically hermetically sealed.

Mention has been made that the comb form of the clamping bars **54**, permits the frame to accommodate bags of different widths. It is evident that this is possible because the mouth rim of the bag must encircle only those teeth which are along the clamping bars a distance equal to the width of the face of the bag. It is therefore evident that the hook members **36**, **37**, **52**, when in the form of inverted combs respectively, would permit the frame to accommodate cuffed bags as **16**, of different face widths.

In the modified frame bar embodiment shown in Fig. 8, I have combined the structural features of both Figs. 1 and 6. Thus bags may be suspended by the clamping means **64**, or if the bag used is provided with cuff structure, as for instance shown in Figs. 4 or 5, it may be hung upon the hooks **52**. In this Fig. 8, the frame bar is denoted by the numeral **65**, the clamping bar is **66** and the rubber strip is indicated as **67**. Finger piece **68** is used to open the clamp.

If the device described herein is to be used for suspending a bag to collect refuse in, it may be hung on the back of a door or onto a wall by means of screws or hooks through the holes **68'** in the member **17** or its equivalent in the other described modified frame constructions. If the frame is removable from its mount, or if the use of the device is for purposes where it is carried about, the frame may be provided with suitable handles as **69** and **70**.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiments herein shall be deemed illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the specific description herein to indicate the scope of this invention.

I claim:

1. In an article of the character described, a bag, an openable and closable frame structure, detachably mounted on two directly opposite portions of the rim of the bag; said frame structure serving as a closure means for the bag, locking means on the frame for maintaining said frame in closed condition and releasable to permit the frame to be opened and resilient elements along directly opposite faces of the frame portions on which said rim portions of the bag are mounted, whereupon closing the frame, said elements become compressed; the bag being positioned between said resilient elements.

2. In an article of the character described, a bag, an openable and closable frame sructure detachably mounted on two directly opposite portions of the rim of the bag; said frame structure serving as a closure means for the bag, locking means on the frame for maintaining said

frame in closed condition and releasable to permit the frame to be opened; said frame having a pair of opposite elongated members which move apart when the frame is opened and which are moved towards each other for the frame to close and clamp means on each of said elongated members detachably engaging said bag portions respectively.

3. In an article of the character described, a bag, an openable and closable frame sructure detachably mounted on two directly opposite portions of the rim of the bag; said frame structure serving as a closure means for the bag, locking means on the frame for maintaining said frame in closed condition and releasable to permit the frame to be opened; said frame having a pair of opposite elongated members which move apart when the frame is opened and which are moved towards each other for the frame to close; said opposite portions of the bag being mounted on such opposite frame members respectively and including hook means on each of said elongated members detachably engaging said bag portions respectively; said hook means being resilient and clamping the bag closed between them when the frame is closed.

4. In an article of the character described, a bag, an openable and closable frame sructure detachably mounted on two directly opposite portions of the rim of the bag; said frame structure serving as a closure means for the bag, locking means on the frame for maintaining said frame in closed condition and releasable to permit the frame to be opened; said frame having a pair of opposite elongated members which move apart when the frame is opened and which are moved towards each other for the frame to close and means on each of said elongated members having the form of a comb; teeth of said combs engaging said bag portions respectively.

5. In an article of the character described, a bag and an openable and closable frame structure serving as a closure for said bag; said frame including two parallel elongated members along the mouth rim portions of opposite portions of the bag and detachably mounted thereon respectively; said frame members being the only portions of the frame mounted on the bag; portions of the bag which are between said frame members, being free of the frame; said frame including means associated with both said frame members, adapted upon opening and closing of the frame, to maintain said two frame members in constant parallel relation, limit the relative movement of said two frame members to a single flat plane when one of the said members is held at rest, whereby the mouth of the bag is constantly in a single flat plane and maintain said members against relative longitudinal movement and means on the frame for maintaining said two frame members in position that their opposite faces are in closest possible relation and releasable to permit said two frame members to be separated.

6. In an article of the character described, a bag and an openable and closable frame structure serving as a cloure for said bag; said frame including two parallel elongated members along the mouth rim portions of opposite portions of the bag and detachably mounted thereon respectively; said frame members being the only portions of the frame mounted on the bag; portions of the bag which are between said frame members, being free of the frame; said frame including means associated with both said frame members, adapted upon opening and closing of the frame, to maintain said two frame members in constant parallel relation, limit the relative movement of said two frame members to a single plane when one of said members is held at rest and maintain said members against relative longitudinal movement, means on the frame for maintaining said two frame members in position that their opposite faces are in closest possible relation and releasable to permit said two frame members to be separated and resilient elements, carried one on each member of said pair of frame members; said elements being opposite each other and adapted to become compressed when said frame members are in their closest relation; the bags being between said elements.

7. In an article of the character described, a bag and an openable and closable frame structure serving as a closure for said bag; said frame including two parallel elongated members along the mouth rim portions of opposite portions of the bag and detachably mounted thereon respectively; said frame members being the only portions of the frame mounted on the bag; portions of the bag which are between said frame members, being free of the frame; said frame including means associated with both said frame members, adapted upon opening and closing of the frame, to maintain said two frame members in constant parallel relation, limit the relative movement of said two frame members to a single plane when one of said members is held at rest and maintain said members against relative longitudinal movement, means on the frame for maintaining said two frame members in position that their opposite faces are in closest possible relation and releasable to permit said two frame members to be separated; the mentioned means to maintain said pair of elongated frame members in their defined relation consisting of two sets of linkages associated with the corresponding ends of said two frame members respectively; each such set of linkage comprising a first pair and a second pair of links, one of the ends of each of the first pair of links being hingedly associated and the other ends of said first pair of links being hingedly associated respectively with said elongated parallel frame members; one of the ends of each of the second pair of links being hingedly associated and the other ends of said second pair of links being hingedly associated respectively with said elongated parallel frame members; the arrangement of the second set of links being identical with that of the first set of links; all the axes of hinge connections of the links of both first pair of links of both sets, being parallel and all axes of hinge connections of the links of both second pairs of links of both sets, being parallel to each other and perpendicular to the other axes of hinge connections; the links of both first pairs of both sets being of equal length and the links of both second pairs of both sets being of equal length.

8. In an article of the character described, a bag and an openable and closable frame structure serving as a closure for said bag; said frame including two parallel elongated members along the mouth rim portions of opposite portions of the bag and detachably mounted thereon respectively; said frame members being the only portions of the frame mounted on the bag; portions of the bag which are between said frame members, being free of the frame; said frame including means associated with both said frame members, adapted upon opening and closing of the frame, to maintain said two frame members in constant parallel relation, limit the relative movement of said two frame members to a single plane when one of said members is held at rest and maintain said members against relative longitudinal movement, means on the frame for maintaining said two frame members in position that their opposite faces are in closest possible relation and releasable to permit said two frame members to be separated; the mentioned means to maintain said pair of elongated frame members in their defined relation consisting of two sets of linkages associated with the corresponding ends of said two frame members respectively; the bag being between both sets of linkage.

9. In an article of the character described, a bag and an openable and closable frame structure serving as a closure for said bag; said frame including two parallel elongated members along the mouth rim portions of opposite portions of the bag and detachably mounted thereon respectively; said frame members being the only portions of the frame mounted on the bag; portions of the bag which are between said frame members, being free of the frame; said frame including means associated

with both said frame members, adapted upon opening and closing of the frame, to maintain said two frame members in constant parallel relation, limit the relative movement of said two frame members to a single plane when one of said members is held at rest and maintain said members against relative longitudinal movement, means on the frame for maintaining said two frame members in position that their opposite faces are in closest possible relation and releasable to permit said two frame members to be separated is provided with a downward cuff on its rim and including hook means on each of said two elongated parallel frame members respectively; said hook means being positioned within said cuff whereby the bag is suspended from the frame structure.

10. The article as defined in claim 9, wherein each said hook forms an upright channel with its associated elongated frame members; the cuff being within said channels.

11. The article as defined in claim 10, wherein the bag

includes front and back portions and foldable and expandable gussets; said gussets being the sides of the bag; said channels engaging the cuff substantially along the entire rim portions of the front and rear portions of the bag respectively; the cuff being within said channels.

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