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[54] **COLLAPSIBLE SUPPORT UNIT FOR A GARMENT BAG OR THE LIKE**

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[51] **Int. Cl.** **A47f 5/10**

[58] **Field of Search**..... 211/118, 178 R, 178 A, 211/104; 248/435, 177, 188.8, 188.9, 188.7

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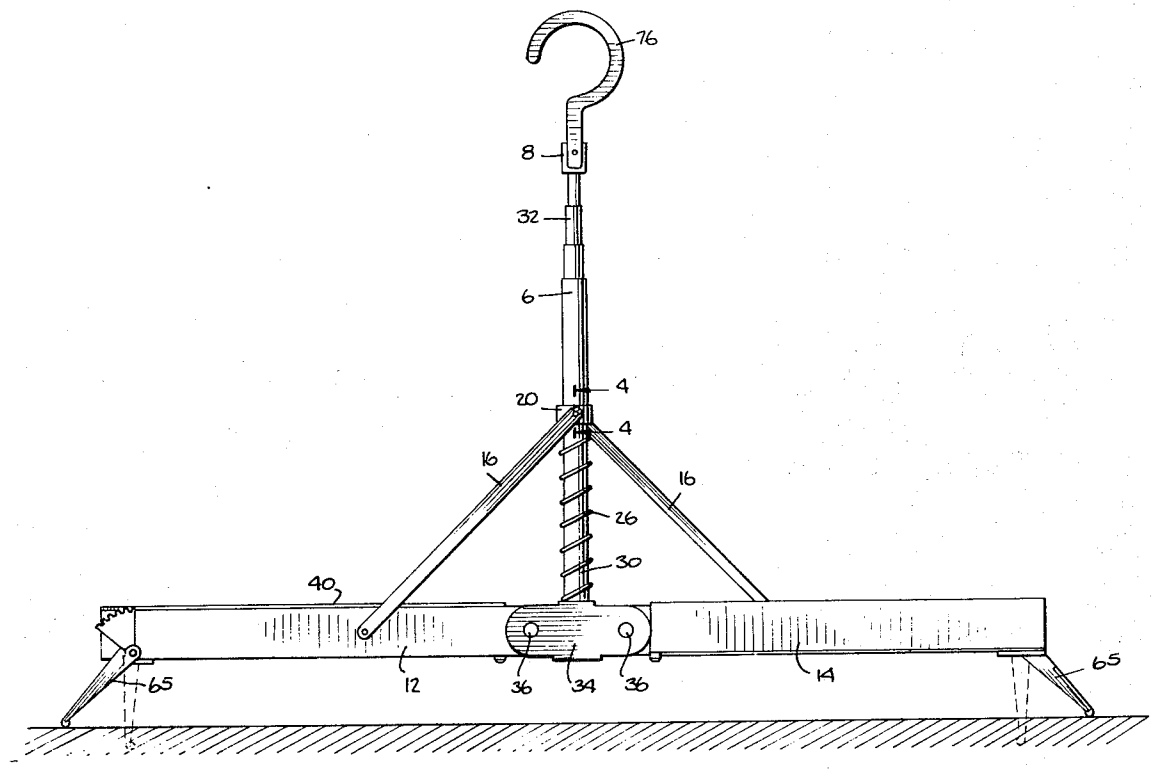
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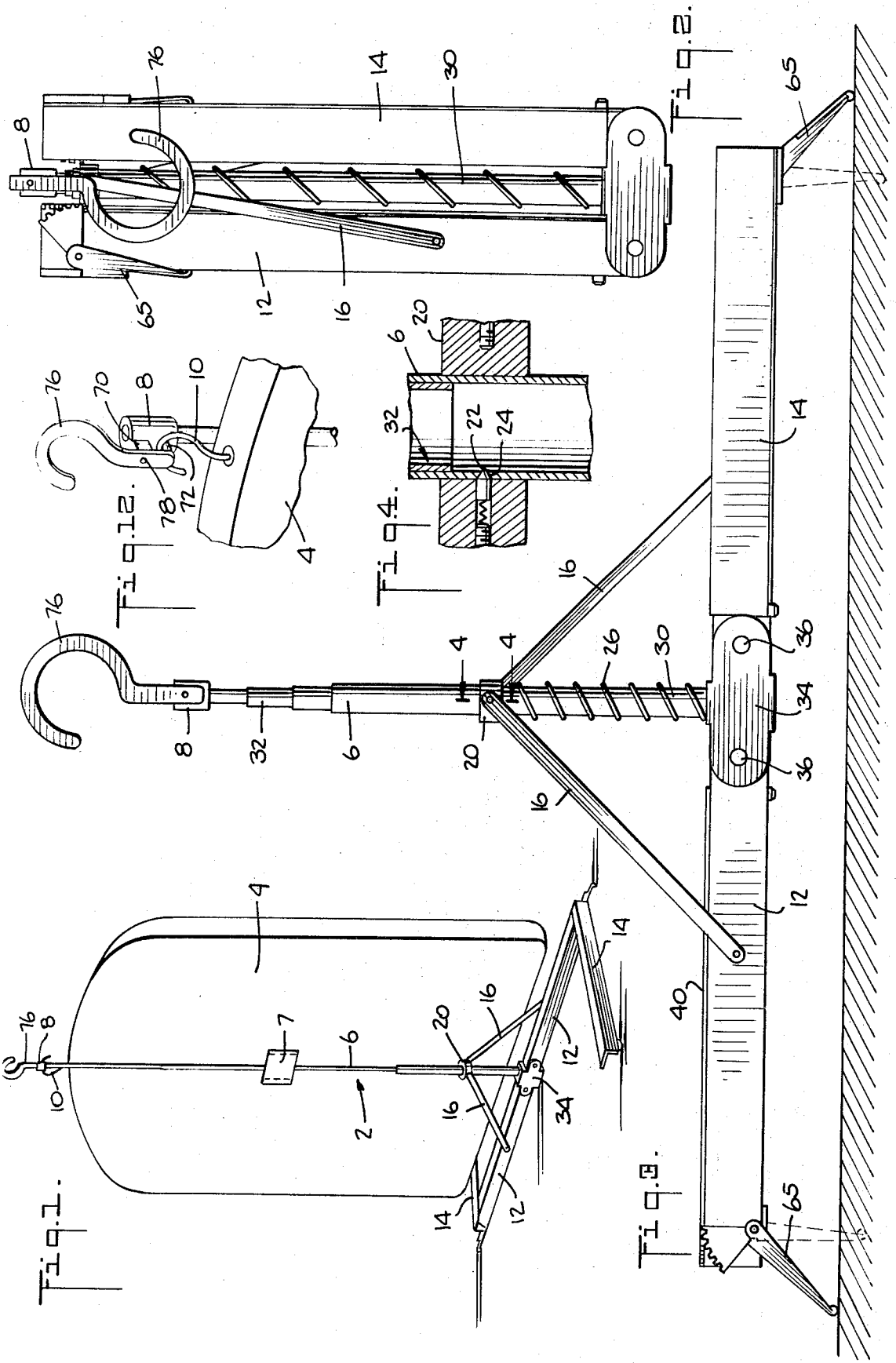
Primary Examiner—Ramon S. Britts
Attorney, Agent, or Firm—Kenyon & Kenyon Reilly Carr & Chapin

[57] **ABSTRACT**

A collapsible support unit for supporting a generally flat object, such as a garment bag, in vertical disposition above the ground. The support unit includes an upright vertical shaft having a connection at its upper end for releasably engaging an upper end of the object to be carried. Two base legs are pivotally connected to the lower end of the shaft and are movably between a retracted position lying against the shaft and an extended position extending generally horizontally, in opposite transverse directions, in which the base legs are adapted to rest on the ground. Two base feet are provided, each being pivotally connected to a free end of an associated one of the base legs. In a folded position each base foot lies against its associated base leg. A mechanism associated with each base foot moves it between its folded position and an unfolded position in which the base foot extends generally horizontally at an outward inclination from its associated base leg, as the base leg moves between its retracted and extended positions, respectively.

13 Claims, 12 Drawing Figures




Fig. 1.
Fig. 2.
Fig. 3.
Fig. 4.
Fig. 12.

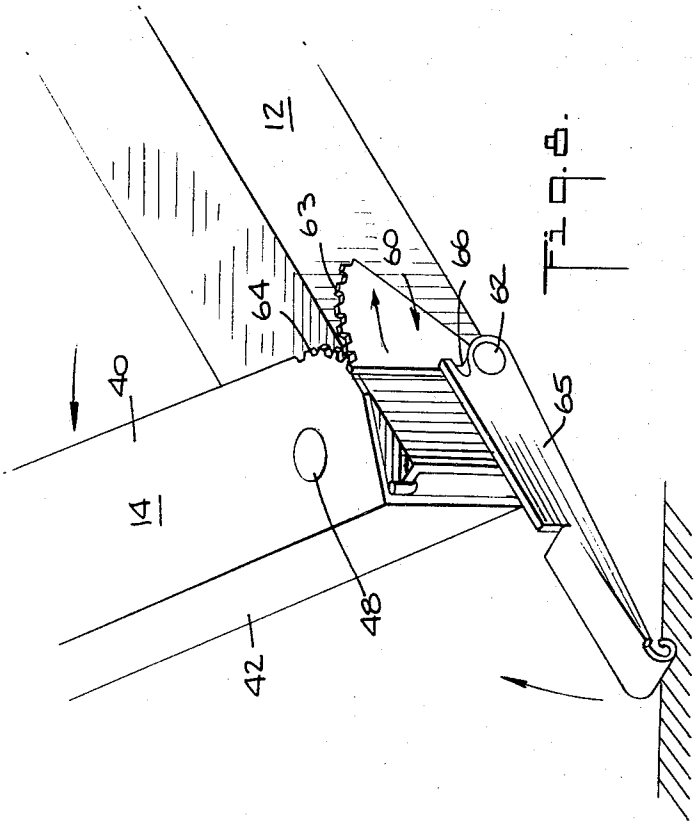

12
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Fig. 4.

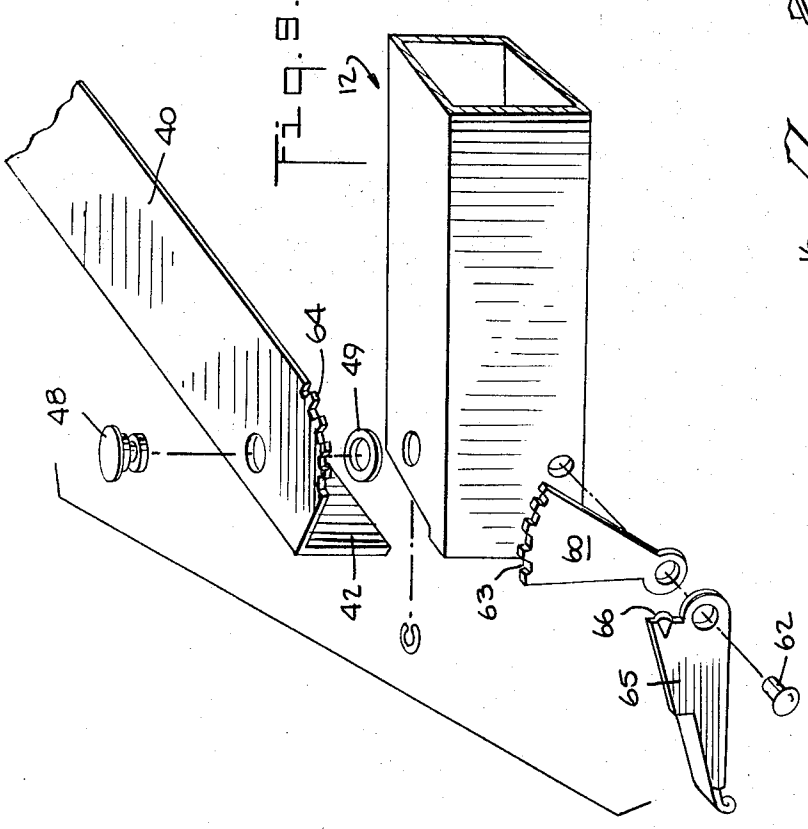
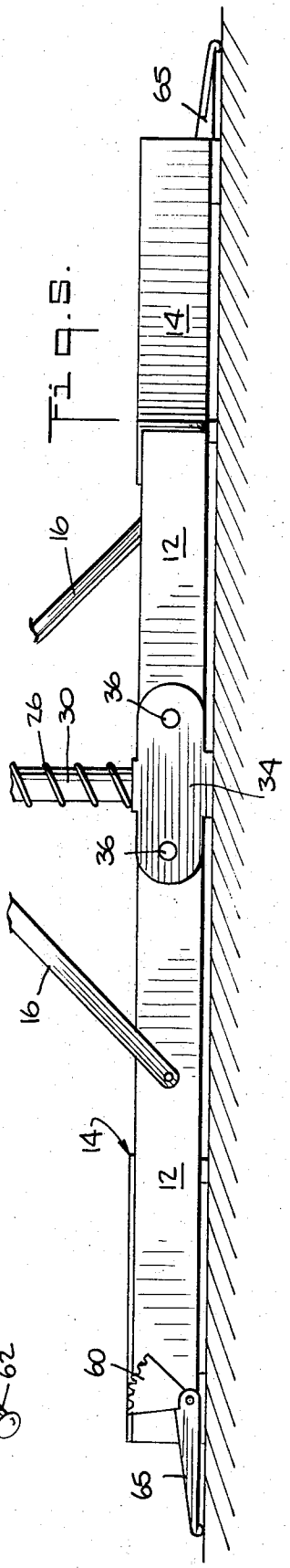
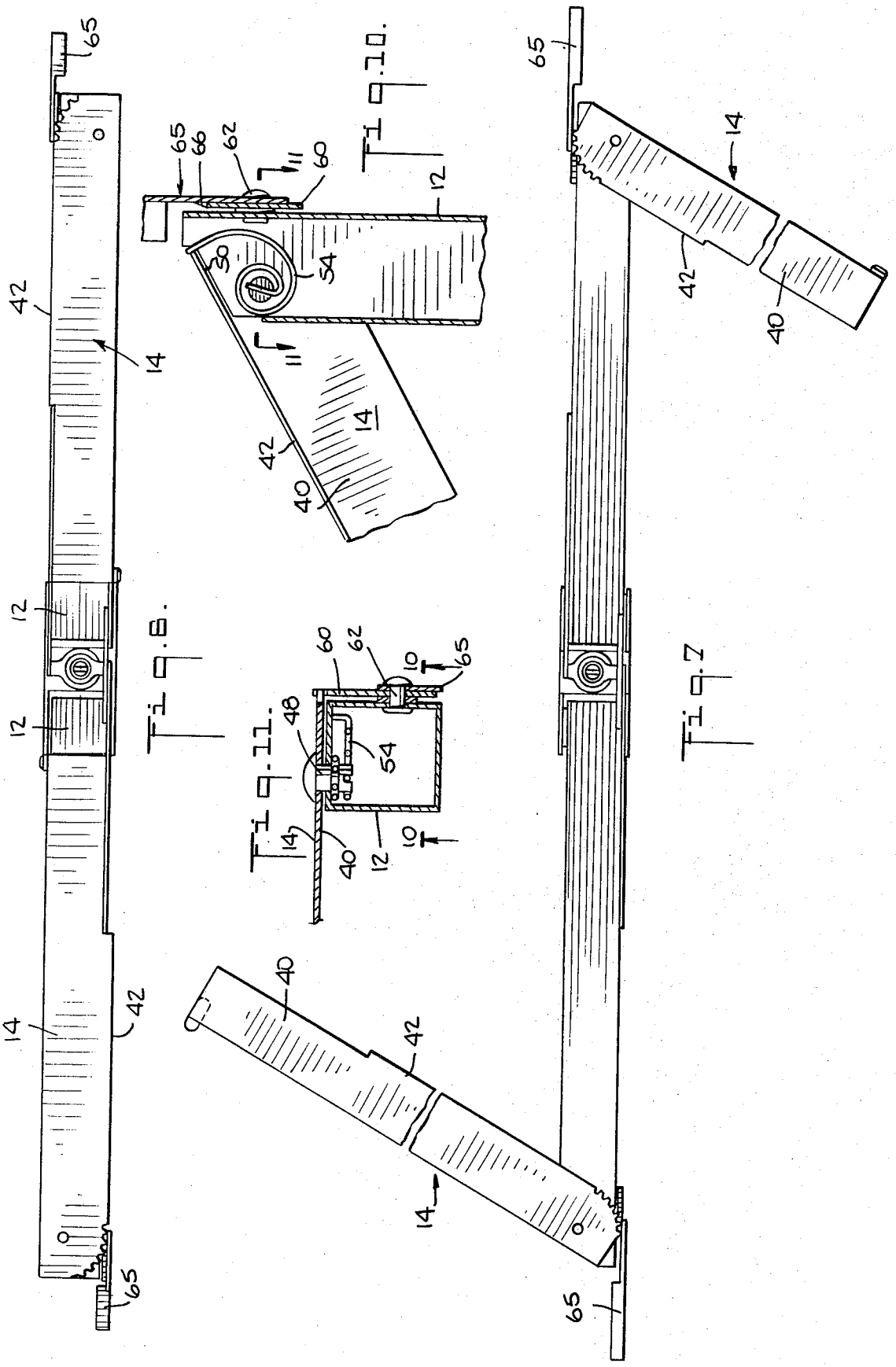

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Fig. 5.


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Fig. 8.
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Fig. 10.
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Fig. 11.
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Fig. 7

COLLAPSIBLE SUPPORT UNIT FOR A GARMENT BAG OR THE LIKE

BACKGROUND OF THE INVENTION

This invention relates to a collapsible support unit for a generally flat object, such as a garment bag, to support the object in generally vertical disposition above ground level.

To avoid undue creasing of suits, dresses and other garments during travel, which might occur in a suitcase, many travelers prefer to hang such clothing on one or more coathangers and enclose them within a garment bag which covers the clothing while leaving the hanger hooks exposed to be grasped by the traveler's hand. The weight of the clothing on the hanger can sometimes be quite appreciable and the burden on a traveler standing, for example, in a line to buy tickets or experiencing some other delay at a transportation terminal can become very wearisome. At such times the traveler may be tempted to drop the garment bag on the ground or over chairs or suitcases which can cause inconvenience to other travelers, creasing of the clothing inside, and may involve repeated bending down and picking up the garment bag as the line moves forward.

It would, therefore, be desirable to provide a lightweight collapsible support which could be utilized to relieve the traveler of the burden of carrying the weight of the clothing in a garment bag while he is standing around waiting and to free him from the necessity to frequently bend up and down to deposit and pick up the garment bag. Such a support should support the garment bag so that the clothes inside are hanging in an upright condition so that they do not become wrinkled. When not in use the collapsible support unit should be foldable to minimum dimensions without requiring complicated maneuvers or dismantling steps.

SUMMARY OF THE INVENTION

A collapsible support unit constructed in accordance with a preferred embodiment of the invention is intended to provide a solution to the problems referred to above.

In more detail a collapsible support unit according to the invention is intended to support a generally flat object in vertical disposition above an underlying horizontal surface such as the ground or floor. Although the invention will be described hereafter with reference to a support for a garment bag, it will be understood that the structure described may be utilized to support many other types of objects requiring a collapsible support such as, for example, a map, a movie screen, a painting, a target, a rug, or other such object without limitation. The support unit includes an upright vertical shaft provided with a connection at its upper end for releasably engaging an upper end of the object to support the latter in generally vertical disposition above the ground. At least two base legs are pivotally connected with a lower end of the shaft and are movable between a retracted position in which the base legs lie closely against the shaft and an extended position. In the extended position the base legs extend generally horizontally in opposite transverse directions from the shaft and are adapted to rest on the ground. At least one base foot is pivotally connected to a free end of an associated one of the base legs. In a folded position of the base foot, it lies against the associated base leg. A mechanism is associated with the base foot for moving it between its folded position and an unfolded position in which it extends generally horizontally at an outward inclination from the associated base leg, upon movement of the base leg between its retracted and extended positions, respectively.

It will be appreciated that the structure described provides a collapsible support which can be unfolded from a condition in which it occupies a minimum of space to an operative condition in which it can be utilized to support the garment bag thereby relieving the traveler of the necessity of carrying the burden. In addition, the base legs and the base feet are spring-loaded to return them to the retracted condition so that the unit is provided with a self-folding capability after its use is no longer desired.

BRIEF DESCRIPTION OF THE DRAWINGS

A collapsible support unit constructed in accordance with one preferred embodiment of the invention, is illustrated in the accompanying drawings in which:

FIG. **1** is a perspective view of the collapsible support unit shown in an operative condition supporting a garment bag,

FIG. **2** is a side-view of the collapsible support unit shown in FIG. **1**, folded into a collapsed condition,

FIG. **3** is a side-view of the collapsible support unit shown in FIG. **2** shown in a partially expanded condition prior to being set down on an underlying ground surface,

FIG. **4** is a cross-sectional side view of a portion of the collapsible support unit shown in FIG. **2** taken along the lines **4—4** therein, illustrating a collar and releasable detent forming a part of the unit,

FIG. **5** is a side view of the lower end of the collapsible support unit shown in FIG. **2** after the unit has been set down on the ground surface,

FIG. **6** is a top view of the collapsible support unit shown in FIG. **2**,

FIG. **7** is a top view of the collapsible support unit but with two base feet shown in an unfolded condition after setting down of the unit onto the ground,

FIG. **8** is a perspective view on an enlarged scale of a mechanism for moving one of the base feet shown in FIG. **7** between folded and unfolded positions of the base foot,

FIG. **9** is an exploded perspective view of the components constituting the mechanism shown in FIG. **8**,

FIG. **10** is a view from beneath looking upward, partially in cross section, of a spring utilized to urge the base foot from its unfolded to its folded position;

FIG. **11** is a cross-sectional end view of the base foot and spring shown in FIG. **10** taken along the line **11—11** therein and

FIG. **12** is a perspective view of a portion of the upper end of the support unit showing a connection for engaging a garment bag.

DETAILED DESCRIPTION

Referring to FIG. **1** of the drawings, a collapsible support unit **2** constructed in accordance with the preferred embodiment of the invention is there shown, in an operative condition supporting a conventional garment bag **4**. To steady the garment bag on the shaft **6**, a strip of material **7** may be secured to the rear of the garment bag **4** extending around the shaft **6**. Although

the invention will be discussed with reference to providing a support for a garment bag, it may equally be used to support a map, a blackboard, a target, a movie screen, or any other item requiring a convenient collapsible support for carrying the object in generally vertical disposition above ground level.

The support unit includes a telescopic vertical shaft **6** provided with a connector **8** (FIG. **12**) at its upper end to which a clothes hanger hook **10** projecting from the garment bag **4** may be attached, thereby enabling the support unit to carry the garment bag in vertical disposition above the ground. The shaft **6** is supported on the ground by two base legs **12** which, in their extended position (FIG. **1**), extend horizontally in opposite transverse directions from the shaft. Stabilizing the base legs **12** so that the unit does not tip over in a forward or backward direction, are two base feet **14** extending at an outward inclination from the free ends of the base legs **12** in opposite directions.

In the unfolded, or operative, condition of the unit, the base legs **12** are held in their horizontal extended position by two links **16** (FIG. **3**) pivotally connected at their lower ends to the base legs **12** and at their upper ends to a collar **20** mounted for sliding motion on the exterior of the shaft **6.** The collar **20** is held in a lower position of its sliding travel along the shaft by a spring loaded detent having a tapered nose projecting into an orifice **24** having an inwardly tapered wall as shown in the surface of the shaft **6.** The legs are unfolded by moving one of the base legs manually relative to the shaft **6,** to the extended position at which time the detent **22** engages.

To collapse the support unit **2,** force is applied to one of the legs **12,** for example, by inclining it and pressing it against the ground so that the associated link **16** pushes the collar **20** upwardly with sufficient force to unseat the detent **22.** Unseating of the detent **22** is caused by a camming action of the tapered wall of the orifice **24** against the tapered nose of the detent **22.** A compression spring **26** then expands forcing the collar **20** upwardly so that the links **16** retract the base legs **12** to a position lying closely along side the shaft **6** (FIG. **2**). During this motion the base feet **14** fold inwardly against their associated base legs **12** (as will be described). Thus, the support unit **2** provides a self-folding structure which assumes a minimum space configuration when not in use. Subsequently, the shaft **6** may be telescoped inwardly so that the entire support unit **2** assumes the compact, collapsed configuration shown in FIG. **2.**

Referring in more detail to FIG. **3,** the shaft **6** includes an outer tube **30,** on which the collar **20** slides, which receives a plurality of telescoping sections **32** permitting vertical extension of the shaft. The various telescoping sections **32** and the outer tube **30** are provided with yieldable internal detents (not shown) well known in telescopic tube construction so that the tube remains erect in its extended position and does not collapse until a force sufficiently great to cause the detents to yield is applied to its opposite ends. The detents have sufficient resistance to motion to insure that the tube does not collapse under the weight of the garment bag but remains extended. Alternative constructions, such as the use of catches, for holding the tube sections in this extended position may be employed. Attached to the bottom end of the outer tube **30** is a bracket **34** extending on opposite transverse sides of the shaft and supporting two horizontal pins **36.** The base legs **12,** which are of box section configuration, are mounted for vertical pivoting motion on the pins **36.** Sufficient clearance is provided between the adjacent ends of the base legs and the shaft and the interior portions of the bracket **34** to insure unimpeded pivoting motion of the base legs between the retracted and extended positions. The previously mentioned compression spring **26** is sleeved about the outer tube **30** with its lower end contacting the interior of the bracket **34** and its upper end abutting the underside of the collar **20.** Once the detent **22** has become unseated, the compression spring **26** expands moving the collar to its extreme upper position so that the links **16** pivot the base legs **12** upwardly to the retracted position previously described and shown in FIG. **2.**

Should the support unit **2** require complete collapsing for the unfolded condition, for example, for storage, the telescoping sections **32** are pushed into the outer tube **30.** During this time, the lowermost telescoping section **32** cams the detent **22** outwardly of the orifice **24** in the outer tube **30** to release the collar **20** (FIG. **4**). The spring **26** then becomes active to complete the collapse of the base legs **12** and feet **14** (FIG. **2**).

The previously mentioned base feet **14** are constructed from L-section material each having a horizontal upper wall **40** and a vertical wall **42** (FIGS. **8** and **9**). In its folded position each base foot **14** lies against its associated base leg **12** with the upper wall **40** overlying the adjacent upper wall of the base leg **12** and with the vertical wall **42** abutting the adjacent vertical wall of the base leg (FIG. **6**). The vertical walls **42** of the two base feet **14** face in opposite directions and are on opposite sides of their respective base legs **12** because the base feet rotate open in opposite directions to provide equilibrated support. Each base foot **14** is pivotally connected to its associated one of the base legs **12** by a vertical connector **48** (FIGS. **9** and **11**) passing through aligned holes in the overlapping upper walls of the base foot and the base leg. The connector **48** has a head at its upper side and is provided with a nut at its lower end. A washer **49** is interposed between the adjacent upper walls of the base foot and the base leg to space them out of contact to reduce friction. Adjacent portions of the end of the base leg which might interfere with the pivoting motion of the base foot **14** between its folded and unfolded positions are cut away (FIG. **10**). However, a shoulder **50** is provided at the end of the base leg **12** to limit the outward pivoting motion of the base foot **14** in its extreme unfolded position to the desired degree of outward inclination relative to the base leg. The extreme outward inclination in the preferred embodiment is in the range 60° – 90°, but different inclination may be chosen.

The base foot **14** is returned from its unfolded position to its folded position against the base leg by a spiral spring **54** (FIGS. **10** and **12**). The spiral spring **54** is mounted horizontally with one of its ends secured in the vertical wall **42** of the base foot and its other end fixedly mounted in a slot in a nut at the lower end of the connector **48.** The spring force is so arranged as to urge the base foot **14** to its folded position.

To move the base foot **14** from its folded to its unfolded position during erection of the support unit, each base foot is provided with a lever and gear mechanism (FIGS. **8** and **9**). The mechanism includes an arm

60 of inverted, generally segmental configuration abutting the base leg 12 on its vertical side wall opposite the side wall facing the vertical wall 42 of the associated base foot 14. The lower end, or apex, of the arm 60 is mounted for pivoting motion about a horizontal axis which is perpendicular to both the longitudinal axis of the base leg and to the axis of rotation of the base foot 14 about the connector 48, on a connector 62 extending through the arm 60 and the adjacent side wall of the base leg 12 (FIG. 11). Along its curved, upper peripheral edge the arm 60 is provided with a sector 63 of gear teeth which matingly engage a corresponding sector 64 of gear teeth at an adjacent corner of the upper wall 40 of the base foot 14. The gear teeth extend for sufficient peripheral distances to insure that over the range of pivoting motion of the arm 60 between its extreme positions, the base foot 14 is rotated between its folded and unfolded positions. The spring 54 biasing the base foot 14 to its folded position causes the arm 60 to normally occupy an extreme initial position in which the gear teeth at the inward ends of the gear teeth sectors 63 and 64 are engaged (FIGS. 2 and 6).

To rotate the arm 60 to unfold the base foot a lever 65 is pivotally mounted on the connector 62 for concentric rotation with the arm. When each base leg is in its retracted condition, its associated lever lies closely alongside the adjacent base leg 12 (FIG. 2). When the base legs 12 are moved to the extended position the arms 65 swing freely towards the ground under their own weight (dotted lines in FIG. 3). The lower end of each lever 65 contacts the ground in advance of the remainder of the unit and, as the unit continues to descend, the lever is pivoted outwardly and upwardly. Such pivoting moves a transverse shoulder 66 on the lever, created by forming a transverse dimple in its side wall, into contact with the adjacent vertical edge of the arm 60. Continued downward motion of the unit then causes the lever 65 to rotate the arm 60 in a direction longitudinally inward of the base leg 12 (as shown by the arrow in FIG. 8) with the result that the arm 60 rotates the base foot to its unfolded position. Finally, as the base legs 12 settle onto the ground, the lever 65 is in horizontal alignment with the base leg having moved the arm 60 through its extreme range of motion to its final position and fully extended the base foot.

In a reverse operation, to fold the base feet, all that is necessary is for the traveler to lift the unit clear off the floor at which time the springs 54 cause the base feet 14 to automatically fold against the base legs 12. If the traveler wishes to complete the folding process he then applies a sideways and downward force to the support 6 to force one of the legs 12 against the ground at an inclination which causes the release of detent 22. After the detent is released, the spring 26 completes the retracting action of the base legs 12. At this time the traveler may leave the unit still attached to the garment bag with the shaft 6 still in the extended condition. At the conclusion of his journey he may remove the garment bag entirely from the support unit and complete the folding process by telescoping the sections 32 inward to collapse the unit.

The previously mentioned connector 8 (FIG. 12) includes two vertically spaced upper and lower horizontal stubs 70 and 72, respectively. A hook 76, of the type used for engaging a support rod or the like, is connected for pivoting motion to the upper stub arm 70 by a horizontal pin 78, with the lower end of the arm 76 extending below and obscuring the gap between the stub arms. To attach the hook 10 of the garment hanger to the support unit, the hook 76 is pivoted aside to expose the gap between the upper and lower stub arms 70 and the hook 10 moved therein. The hook 76 is then swung back. When the unit is fully collapsed as shown in FIG. 2, the hook 76 may be swung through 180° to further reduce the collapsed height of the overall unit.

What is claimed is:

1. A collapsible support unit for supporting an object in vertical disposition above an underlying horizontal surface, such as the ground, the support unit comprising,

an upright vertical shaft,

a connection at the upper end of said shaft adapted to releaseably engage the object to support the object in generally vertical disposition above the ground,

at least two base legs pivotally connected with a lower end of said shaft for motion between a retracted position lying against said shaft and an extended position in which said base legs are adapted to rest on the ground extending perpendicularly to said shaft in opposite transverse directions therefrom,

at least one base foot, pivotally connected to a free end of an associated one of said base legs, said base foot in a folded position thereof lying against the associated said base leg; and

first means associated with said base foot for moving it from its folded position to an unfolded position extending horizontally at an outward inclination from the associated said base leg during movement of said base leg onto the ground,

wherein each said base leg extends along a longitudinal first axis thereof, said base foot being hinged to the free end of the associated said base leg for pivotal motion about a second axis perpendicular to said first axis, said first means for moving said base foot comprising, an arm connected to the free end of the associated said base leg for pivoting motion about a third axis perpendicular to both said first and second axes, first and second engaging gear teeth on said arm and on adjacent portions of said base foot, pivoting motion of said arm between extreme positions thereof relative to the associated said base leg causing said base foot to rotate between its folded and unfolded positions; and a lever contacting said arm connected with said base leg for pivoting motion about said third axis, said lever having a free extremity inclined downwardly and outwardly from the associated said base leg in the extended position thereof whereby said lever contacts the ground in advance of the associated said base leg, subsequent downward motion of the unit causing said lever to pivot into generally horizontal alignment with the associated said base leg thereby causing said arm to rotate said base foot to the unfolded position thereof.

2. A collapsible support unit as defined in claim 1 further including,

second means connected with said base leg for returning said base foot to the folded position upon lifting of the associated said base leg from the ground; and

third means connected with said shaft for moving said base legs from the extended to the retracted position upon selected displacement of at least one of said base legs from its perpendicular relation to said shaft by a predetermined amount, whereby the unit is provided with a self folding capability.

3. A collapsible support unit as defined in claim **1** including two of said base feet wherein each is provided with associated said first and second means, each base foot being connected to an associated one of said base legs, said base feet in the unfolded positions thereof extending in opposite directions from said base legs.

4. A collapsible support unit as defined in claim **1** wherein said shaft is formed of vertically telescoping sections to permit the height of said shaft to be reduced when the unit is collapsed.

5. A collapsible support unit as defined in claim **2** wherein said third means includes,

a collar mounted on said shaft for sliding motion between upper and lower positions,

at least two links pivotally connecting said collar with said base legs,

releasable detent means connected with said collar and said shaft for yieldably resisting motion of said collar from its lower position, said links supporting said base legs in the extended position when said collar occupies its lower position; and

spring means connected between said collar and the lower end of said shaft for urging said collar upwardly to move said base legs to the retracted position thereof upon release of said detent means.

6. A collapsible support unit as defined in claim **1** further including,

spring means connected with said base leg for urging said base foot from the unfolded to the folded position thereof.

7. A collapsible support unit as defined in claim **1** wherein said lever includes,

a lost motion connection between said lever and the associated said arm to enable said lever to pivot downwardly to a position lying closely alongside the associated said base leg when said base leg is moved to the retracted position thereof.

8. A collapsible support unit as defined in claim **3** wherein said base legs in the retracted position thereof extend upwardly and closely along said shaft on opposite sides thereof with said base feet extending downwardly from the upper end of said base legs lying closely thereagainst.

9. A collapsible support unit as defined in claim **1** wherein said connection includes means for receiving a coathanger, said support shaft further being provided with a hook at its upper end to enable said collapsible support unit and the object carried thereby to be suspended from a support such as a rail or hook.

10. A collapsible support unit for supporting a garment bag provided with a carrying member at its upper end in generally vertical relation above the ground, the support unit comprising,

an upright vertical shaft,

a connection at the upper end of said shaft for releasably engaging the carrying member at the upper end of the garment bag,

at least two base legs pivotally connected with a lower end of said shaft for motion between a retracted position lying against said shaft and an extended position in which said base legs are adapted to rest on the ground extending generally horizontally in opposite transverse directions from said shaft,

at least two base feet, each said base foot being pivotally connected to a free end of an associated one of each of said base legs, each said base foot lying in a folded position against the associated said base leg in the retracted position thereof; and

means associated with each said base foot for moving each said base foot from its folded position to an unfolded position extending horizontally at an outward inclination from the associated said base leg during movement of the associated said base leg onto the ground.

11. A collapsible support unit for supporting an object in vertical disposition above an underlying horizontal surface comprising

an upright vertical shaft,

a connector at the upper end of said shaft for engaging an object to be supported,

at least two base legs pivotally connected with a lower end of said shaft for motion between a retracted position lying against said shaft and an extended position in which said base legs are adapted to rest on the ground and to extend perpendicularly to said shaft in opposite transverse directions therefrom,

at least one base foot pivotally connected to a free end of an associated one of said base legs, said base foot in a folded position thereof lying against the associated said base leg; and

first means associated with each said base foot for moving said base foot from said folded position to an unfolded position extending horizontally at an outward inclination from the associated said base leg during movement of said base leg onto the ground.

12. A collapsible support unit for supporting a garment bag in vertical relation comprising

an upright vertical shaft,

a connector at the upper end of said shaft for releasably engaging a garment bag,

a pair of base legs pivotally connected with a lower end of said shaft for motion between a retracted position lying against said shaft and an extended position in which said base legs extend horizontally in opposite transverse directions from said shaft,

at least two base feet, each said base foot being pivotally connected to a free end of an associated one of each of said base legs, each said base foot lying in a folded position against the associated said base leg in the retracted position thereof; and

means associated with each said base foot for moving each said base foot from said folded position thereof to an unfolded position extending horizontally at an outward inclination from the associated said base leg during movement of the associated said base leg into said horizontal extended position thereof.

13. A collapsible support unit as set forth in claim **12** further comprising second means connected with each said base leg for returning said respective base foot to the folded position upon lifting of the associated said base leg from said extended position.

* * * * *