

[54] **COMPARTMENTALIZED ACCESSORY TRAY ASSEMBLY FOR LADDERS**

[75] Inventor: Paul V. De Luca, Port Washington, N.Y.

[73] Assignee: Porta Systems Corp., Roslyn, N.Y.

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[58] Field of Search 182/129; 312/204, 266, 312/248, 246; 108/26

[56] **References Cited**

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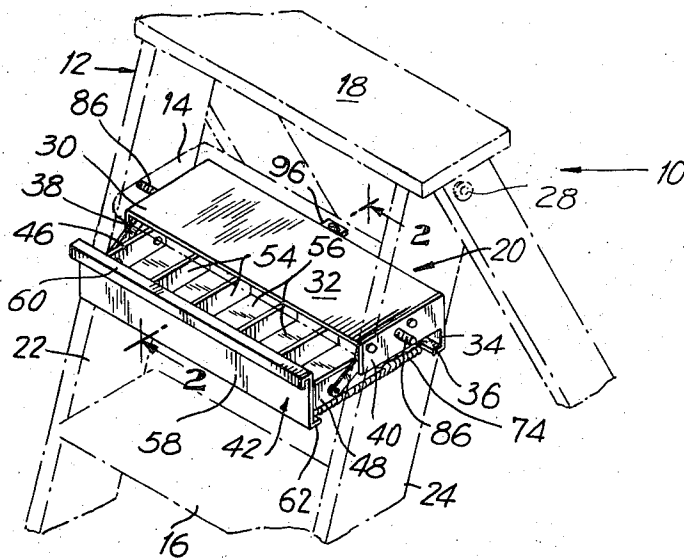
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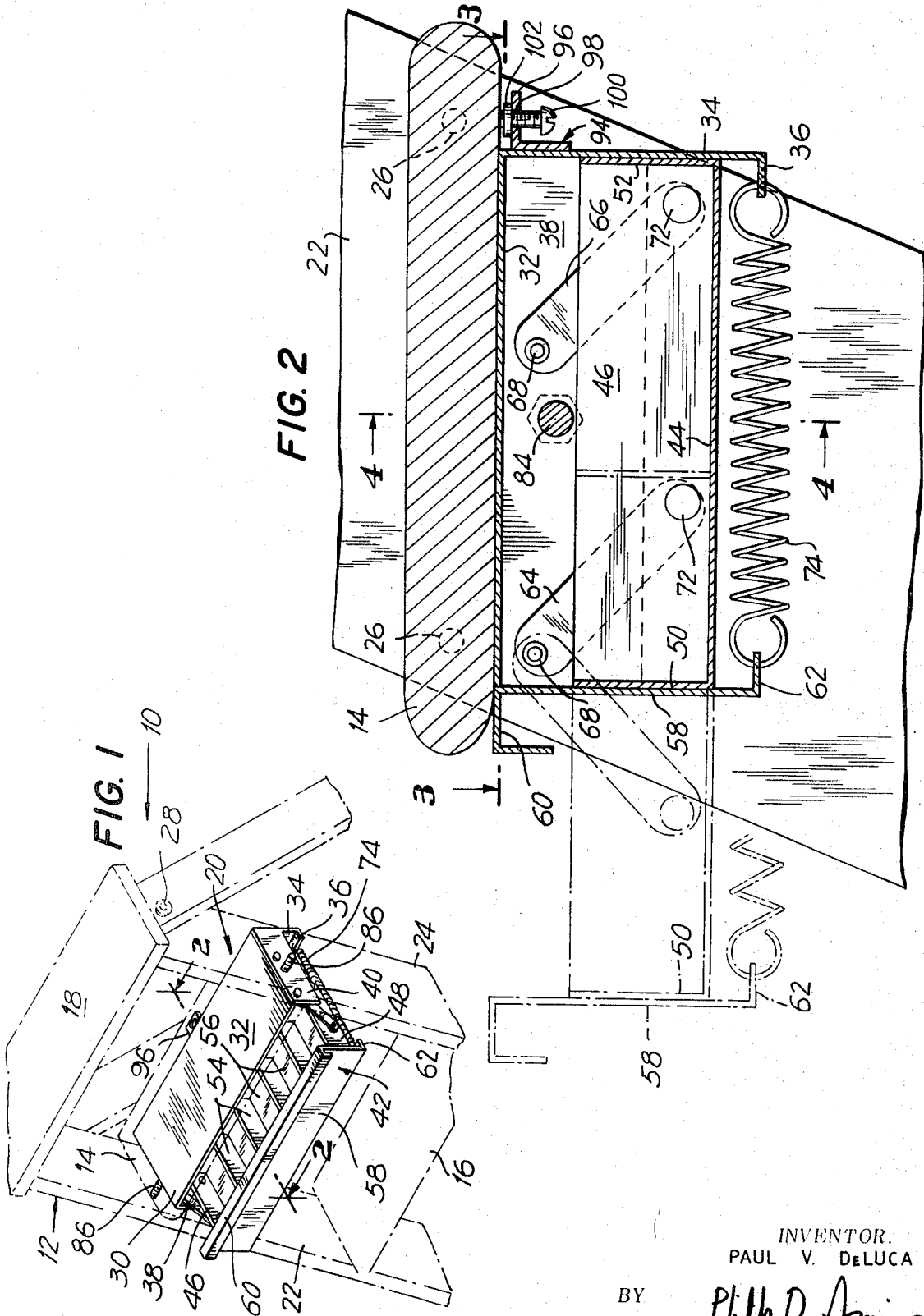
Primary Examiner—Reinaldo P. Machado
Attorney, Agent, or Firm—Philip D. Amins

[57] **ABSTRACT**

A compartmentalized accessory tray assembly in conjunction with a ladder, said tray assembly comprising a housing comprising a top wall, a rear wall and a pair of side walls depending downwardly from said top wall, a compartmentalized tray member including a front wall, a rear wall and a pair of side walls extending upwardly from said bottom wall, a front plate member secured to said tray front wall and having a downwardly extending lip member at the upper end thereof, means interconnecting the respective side walls of said housing and said tray to permit slidable movement of said tray side walls with respect to said housing side walls, spring means interconnected between said housing rear wall and said front plate member to normally bias said tray assembly into a closed position with the front plate member disposed in abutting engagement with the front edge of said housing top wall, and means for securing said tray assembly between the rails of said ladder with the underside of one of the steps thereof disposed in substantially abutting relationship with the upper surface of the housing top wall.

27 Claims, 4 Drawing Figures





INVENTOR.
PAUL V. DELUCA

BY

Philip D. Amis

ATTORNEY

FIG. 3

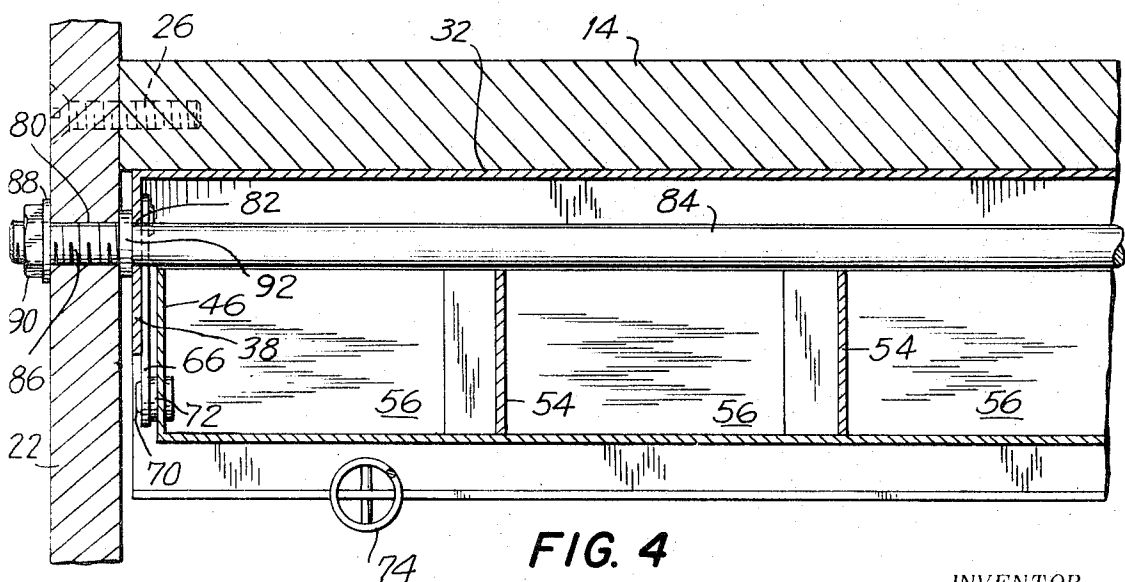
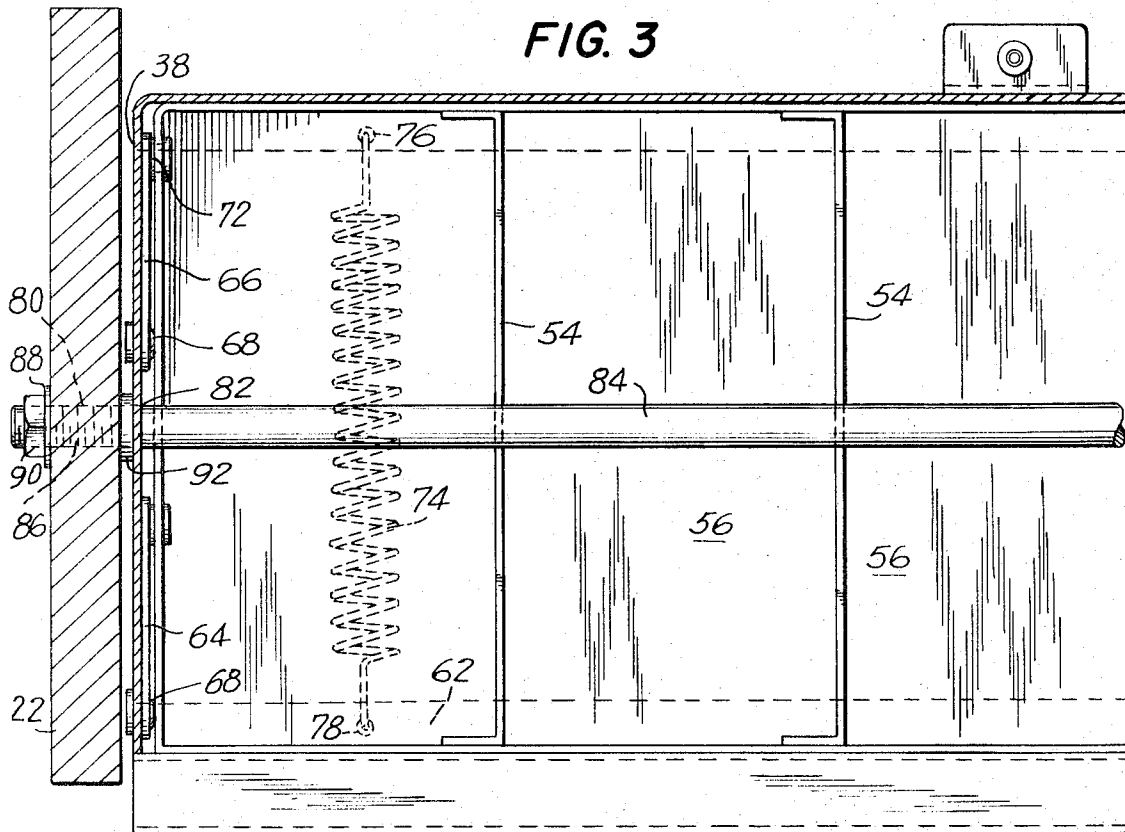


FIG. 4

INVENTOR.
PAUL V. DeLUCA

BY

Philip D. Arin

ATTORNEY

COMPARTMENTALIZED ACCESSORY TRAY ASSEMBLY FOR LADDERS

BACKGROUND OF THE INVENTION

The present invention pertains to a new and novel compartmentalized tray assembly especially in conjunction with ladders and, in particular, step ladders.

Present day step ladders normally do not provide any tray facilities for storing tools and other apparatus of the type which is usually required when using the ladder. Moreover, if tools are used when using the ladder they must be carried on the person of the user of the ladder. In many instances this necessitates the user of the ladder making several trips to and from a central area where his tools are stored. Alternatively, if the user is sufficiently foresighted and gathers all his tools at one time to bring to the work site, he must carry them on his person which is usually very cumbersome, thereby interfering with his ability to perform his desired repair. Furthermore, if the user places his tools on the upper platform of the ladder, which platform is usually pivotable, most often some of the tools tend to fall off therefrom necessitating delay and effort in getting down from the ladder to recover the same.

Particular difficulties are encountered with present day equipment in telephone offices where step ladders are disposed in spaced apart predetermined positions so as to facilitate the access to the various telephone circuits connected therein, especially in central offices. In this situation it is common for particular types of tools, components, etc. to be required at certain locations while various components may be required at other locations.

SUMMARY

Accordingly, it is the primary object of the present invention to provide a new and novel accessory tray assembly.

It is another object of the present invention to provide an accessory tray assembly which affords substantial protection from environmental contamination to the items stored therein.

It is still a further object of the present invention to provide an accessory tray assembly of the aforementioned type which is compartmentalized so as to provide easy access to the items stored therein.

It is still another object of the present invention to provide an accessory tray assembly of the aforementioned type which is normally biased into its closed position.

It is yet another object of the present invention to provide an accessory tray assembly of the above type in conjunction with a step ladder, wherein said tray assembly is connected with and forms a part of a step ladder assembly with the tray assembly being disposed beneath a selected step of the ladder and the front of the tray being positioned either substantially flush with the front edge of the step or slightly recessed with respect thereto, so as to preclude a user of the step ladder assembly from tripping and injuring himself.

It is still a further object of the present invention to provide a new and novel step ladder assembly incorporating an accessory tray assembly which can be fabricated with relative simplicity.

BRIEF DESCRIPTION OF THE DRAWINGS

The preceding and other objects, features and advantages of the present invention will become more apparent from the detailed description hereinafter considered in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective view depicting the step ladder and accessory tray assembly constructed in accordance with the principles of the present invention;

FIG. 2 is a lateral sectional view of the step ladder and accessory tray assembly combination of the present invention taken on the line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2; and

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 2, the present invention and generally denoted by the reference numeral 10. The assembly 10 includes a step ladder 12 having, by way of illustration, steps 14 and 16 and a top step or platform 18. The assembly 10 also includes an accessory tray assembly generally denoted by the reference numeral 20.

The ladder 12 includes side rails 22 and 24 which have the steps 14 and 16 disposed therebetween with the steps 14 and 16 being secured to the rails 22 and 24 by means of screws 26, illustrated by phantom lines in FIGS. 2 and 4. The top platform 18 may also be secured to the rails 22 and 24 by means of screws such as 28 (FIG. 1). However, the ladder 12 may also be fabricated by welding the component parts together or by any other suitable method of fabrication. The construction of the ladder 12, per se, does not form part of the present invention, wherefore the ladder may also be fabricated from metal, wood or any other suitable material.

The accessory tray assembly 20 comprises a housing 30 which includes a top wall 32, preferably of rectangular configuration, a rear wall 34 having an integrally formed inwardly projecting bottom flange 36, with the rear wall 34 being formed integrally with the top wall 32, and a pair of side walls 38 and 40 formed integrally with the top wall 32 and rear wall 34. The side walls 38 and 40 depend downwardly from the top wall and are coextensive therewith but not coextensive

The tray assembly 20 also includes a tray generally denoted 42 which includes a bottom wall 44, a pair of side walls 46 and 48, a front wall 50 and a rear wall 52. Disposed within the interior of the tray 42 are a plurality of parallel disposed partitions 54 which extend between the front and rear walls 50 and 52, and which are positionally secured with respect to said walls. The partitions 54 divide the tray into a plurality of individual separated compartments 56.

The tray 42 also includes a front panel member 58 having a substantially Z-shaped configuration with the upper end thereof having an integrally formed outwardly projecting substantially inverted U-shaped flange portion 60 and the lower end thereof having an inwardly projecting flange 62. The panel member 58 is secured to the front wall 50 such as by welding, or any other suitable method, with the upper end of flange portion 60 being disposed substantially coplanar with the top wall 32 of the housing 30, while the flange 62 is disposed in substantially coplanar relationship with the flange 36 of the housing rear wall 34. The flange portion 60 serves as lip by which the tray 42 is moved outwardly or into an open position from its normally

biased inward or closed position to thereby expose the interior compartments 56, as will be explained with more detailed clarity hereinafter.

The tray 42 is slidably movable in a substantially horizontal plane, inwardly and outwardly of the housing 30, when the ladder 12 is placed in its normal operative position, as shown in FIG. 1. This is accomplished by means of a front link 64 and a rear link 66 positioned in the space provided between the outer surface of the tray side wall 46 and the inner surface of the housing side wall 38, on the left side of the tray assembly 20 (as viewed in FIG. 1), and similar links 64 and 66 positioned in the space provided between the outer surface of the tray side wall 48 and the inner surface of the housing side wall 40, on the right side of tray assembly 20.

The upper ends of each of the links 64 and 66 are pivotally connected to the upper end portion of the housing side walls 38 and 40 by means of pins or rivets 68 passing through openings (not shown) formed therein, while the lower ends of each of the links 64 and 66 are connected for pivotal movement with respect to the tray side walls 46 and 48 about pins or rivets 70 (FIG. 4) passing through openings (not shown) formed therein. It is to be noted that in order to orient the links in a substantially vertical plane it is desirable to provide washers 72 between the lower ends of links 64 and 66 and the outer surfaces of the tray side walls 46 and 48.

The tray 42 is biased in an inward or closed position by means of a pair of helical coil springs 74 disposed beneath the bottom wall 44 of the tray between the flanges 36 and 62. The ends of the springs 74 are connected to flanges 36 and 62 by passing said ends through openings 76 and 78, respectively (FIG. 3) formed therein. Thereafter the ends of the springs 74 are bent around upon themselves, as best seen in FIG. 2.

It will be readily apparent that the foregoing construction results in a tray assembly wherein, when not in use, the tray is maintained in a closed position to prevent any inadvertent dislodgment of the contents of the compartments of the tray and to prevent undesired contamination of the contents of the tray assembly.

In order to connect the tray assembly with respect to the step ladder 12, the ladder 12 is provided with a bore or opening 80 in the rail 22; a similar bore is provided in rail 24 but not specifically shown herein. It is also to be noted that the rails 22 and 24 may be provided with a plurality of openings 80 each of which should be disposed slightly below the steps of the ladder. This construction permits the selective or adjustable connection of the tray assembly 20 with the step ladder 12.

The side walls 38 and 40 of the housing 30 each have a substantially centrally located bore 82 formed therein. The housing 30, and thus the tray assembly 20, is secured to the ladder 12, and more particularly the step 14, by means of a bolt 84 having threaded end portions 86 at both of its ends. However, the bolt may also be formed having only a single threaded end portion 86 and a head (not shown) at the other end thereof. The bores 80 and 82 are aligned and the bolt is inserted therethrough, extending longitudinally through the entire housing 30. The bolt 84 is secured in place by means of washers 88 and nuts 90 disposed on the outside of rails 22 and 24, with a washer 92 being posi-

tioned between the inner surface of the rails and the outer surfaces of the housing side walls.

When the construction is completed as discussed above, the top wall 32 of housing 30 is preferably disposed in abutting relationship with the underside of the step 14. Additionally, the most forward portion of flange or lip 60 is disposed in substantially flush or slightly recessed relationship with respect to the forward edge of step 14. This construction prevents a workman using the ladder 12 from tripping or otherwise being interfered with by the tray assembly 20.

It will be appreciated that use of a single bolt for securement of the tray assembly 18 to ladder 12 facilitates matters and is very easy to utilize if the assembly is desired to be positioned beneath any other step of the ladder. However, if desired, two separate nut and bolt assemblies may be used in place of the preferred construction herein.

In some instances the abutment of the top wall 32 with the underside of the step will be incomplete and could lead to undesirable noises and difficulty in operation of the tray assembly 20. In order to obviate this situation, the rear wall 34 of housing 30 may have an L-shaped flange member 94 connected thereto, such as by welding. The outwardly extending arm 96 of member 94 is provided with a bore 98 through which a threaded bolt 100 is inserted and a nut 102 is placed on the bolt. If a minor adjustment is required, bolt 100 is turned until its extended end is placed in firm abutting engagement with the underside of step 14. In this position, the major portion of top wall 34 will be in abutting engagement with the underside of step 14 but in no event will there be undesirable vertical movement of the tray assembly with respect to the step 14.

It is thus seen that I have provided a new and novel accessory tray assembly construction especially in conjunction with a step ladder which is easy to use and construct and which permits for substantial latitude in positioning selectivity.

While I have shown and described the preferred embodiments of the present invention, it will be appreciated by those skilled in the art that there are many changes, modifications and improvements which may be made therein without departing from the spirit and scope thereof.

What is claimed is:

1. An accessory tray assembly comprising a housing, and a tray member,

said housing comprising

a top wall,

a rear wall, and

a pair of side walls depending downwardly from said top wall,

said tray member comprising

a bottom wall,

a front wall member,

a rear wall, and

a pair of side walls extending upwardly from said bottom wall,

means pivotally interconnecting the respective housing side walls and said tray member side walls to permit slidable movement of said tray member with respect to said housing,

means interconnected between said housing and said tray member to normally bias said accessory tray assembly in its closed position wherein said tray

member is substantially positioned inwardly within said housing,
 said front wall member including means for slidably moving said tray member substantially outwardly from said housing against the force exerted on said tray member by said biasing means, and
 said tray member in the fully open and fully closed positions of said tray assembly being disposed in coplanar relationship.

2. An accessory tray member in accordance with claim 1, wherein
 said front wall member is disposed in abutting engagement with said housing top wall in the normally closed position of said accessory tray assembly.

3. An accessory tray assembly in accordance with claim 2, wherein
 said biasing means comprises at least one spring member interconnected between said front wall member and said housing rear wall.

4. An accessory tray assembly in accordance with claim 3, wherein
 said front wall member comprises
 a tray front wall, and
 a front plate member secured to said tray front wall.

5. An accessory tray assembly in accordance with claim 4, wherein
 said spring member is interconnected between said front plate member and said housing rear wall.

6. An accessory tray assembly in accordance with claim 1, wherein
 said housing top wall, rear wall and side walls are formed integrally with one another.

7. An accessory tray assembly in accordance with claim 6, wherein
 said housing side walls are coextensive with said housing top wall.

8. An accessory tray assembly in accordance with claim 1, wherein
 said tray member front wall member includes a tray front wall, and
 said tray front wall, rear wall and side walls being formed integrally with one another.

9. An accessory tray assembly in accordance with claim 8, wherein
 said tray front wall, rear wall and side walls are formed having a singular unitary height.

10. An accessory tray assembly in accordance with claim 8, wherein
 said tray member includes a plurality of partitions disposed therewithin dividing said tray member into a plurality of compartments.

11. An accessory tray assembly in accordance with claim 10, wherein
 said partitions are positionally secured between said tray front and rear walls.

12. An accessory tray assembly in accordance with claim 11, wherein
 said partitions are connected between said tray front and rear walls to form a compartmentalized tray member having a plurality of individually segregated compartments.

13. An accessory tray assembly comprising
 a housing, and
 a tray member,
 said housing comprising

a top wall,
 a rear wall, and
 a pair of side walls depending downwardly from said top wall,
 said tray member comprising
 a bottom wall,
 a front wall member,
 a rear wall, and
 a pair of side walls extending upwardly from said bottom wall,
 said front wall member comprising
 a tray front wall, and
 a front plate member secured to said tray front wall,
 means pivotally interconnecting the respective housing side walls and said tray member side walls to permit slidable movement of said tray member with respect to said housing,
 at least one biasing spring member interconnected between said housing rear wall and said front wall member to normally bias said accessory tray assembly in its closed position wherein said tray member is substantially positioned inwardly within said housing,
 said front wall member being disposed in abutting engagement with said housing top wall in the normally closed position of said accessory tray assembly and including means for slidably moving said tray member substantially outwardly from said housing against the force exerted on said tray member by said biasing means,
 said front plate member being of substantially U-shaped configuration whose lower end comprises an inwardly projecting flange and whose upper end comprises a substantially inverted outwardly projecting flange, and
 said U-shaped outwardly projecting flange comprising said means for moving said tray member outwardly from said housing.

14. An accessory tray assembly in accordance with claim 13, wherein
 said housing rear wall includes an inwardly projecting flange at the bottom thereof,
 said spring member being interconnected between said housing rear wall flange and said lower end flange of said front plate member, and
 said last mentioned flanges in said fully open and fully closed positions of said accessory tray assembly being disposed in coplanar relationship.

15. An accessory tray assembly comprising
 a housing, and
 a tray member,
 said housing comprising
 a top wall,
 a rear wall, and
 a pair of side walls depending downwardly from said top wall,
 said tray member comprising
 a bottom wall,
 a front wall member,
 a rear wall, and
 a pair of side walls extending upwardly from said bottom wall,
 means pivotally interconnecting the respective housing side walls and said tray member side walls to permit slidable movement of said tray member with respect to said housing,

means interconnected between said housing and said tray member to normally bias said accessory tray assembly in its closed position wherein said tray member is substantially positioned inwardly within said housing, 5

said front wall member including means for slidably moving said tray member substantially outwardly from said housing against the force exerted on said tray member by said biasing means, 10

said housing top wall, rear wall and side walls being formed integrally with one another, 15

said housing side walls being coextensive with said housing top wall, 20

said housing rear wall being coextensive with said housing top wall, and 25

said housing rear wall extending downwardly below said housing side walls.

16. An accessory tray assembly in accordance with claim 15, wherein 30

said housing rear wall includes adjustment leveling means connected thereto.

17. An accessory tray assembly comprising 35

a housing, and

a tray member,

said housing comprising

a top wall,

a rear wall, and

a pair of side walls depending downwardly from said top wall,

said tray member comprising 40

a bottom wall,

a front wall member,

a rear wall, and

a pair of side walls extending upwardly from said bottom wall,

at least one link member interconnected between the respective housing side walls and tray member side walls to permit slidable movement of said tray member with respect to said housing, 45

means interconnected between said housing and said tray member to normally bias said accessory tray assembly in its closed position wherein said tray member is substantially positioned inwardly within said housing, and 50

said front wall member including means for slidably moving said tray member substantially outwardly from said housing against the force exerted on said tray member by said biasing means.

18. An accessory tray assembly in accordance with claim 17, wherein 55

each of said link members has one of the ends thereof pivotally connected with respect to said respective housing side wall and the other end thereof pivotally connected with respect to said respective tray member side wall.

19. An accessory tray assembly in accordance with claim 18, wherein 60

the pivotal connection of the ends of said link members to said housing and tray member side walls includes means for positionally disposing each of said link members in a singularly oriented plane, and wherein the plane of disposition of said link members are in parallel relationship.

20. An accessory tray assembly in accordance with claim 19, wherein 65

said plane of orientation of each of said link members is a vertical plane.

21. The combination of an accessory tray assembly and a step ladder assembly, 1

said accessory tray assembly comprising

a housing, and

a tray member,

said housing comprising

a top wall,

a rear wall, and

a pair of side walls depending downwardly from said top wall,

said tray member comprising

a bottom wall,

a front wall member,

a rear wall, and

a pair of side walls extending upwardly from said bottom wall,

means interconnecting the respective housing side walls and said tray member side walls to permit slidable movement of said tray member with respect to said housing,

means pivotally interconnected between said housing and said tray member to normally bias said accessory tray assembly in its closed position wherein said tray member is substantially positioned inwardly within said housing,

said front wall member including means for slidably moving said tray member substantially outwardly from said housing against the force exerted on said tray member by said biasing means,

said step ladder assembly comprising

a pair of substantially parallel spaced apart side rails, and

a plurality of individual steps secured between said side rails and disposed in spaced vertical relationship with respect thereto, and

means for securing said accessory tray assembly with respect to one of said steps between said side rails comprising

means for positioning the upper surface of said housing top wall in substantially abutting engagement with the underside of said step including openings preselectively formed in said side rails and in said housing side walls.

22. An accessory tray assembly in accordance with claim 21, wherein

said securing means includes bolt means extending through said openings in said side rails and housing side walls disposed in coaxial alignment, and nuts adapted to engage said bolt means to positionally secure the same within said coaxially aligned openings.

23. An accessory tray assembly in accordance with claim 22, wherein 55

said bolt means comprises a single bolt having threaded end portions and extending longitudinally through said tray assembly with the threaded end portions thereof projecting outwardly of said side rails, and

nuts threadedly engaging said bolt end portions to positionally secure said bolt within said openings, all of which are disposed in coaxial alignment.

24. An accessory tray assembly in accordance with claim 23, including 65

means disposed between the outer surface of at least one of said housing side walls and the inner surface of at least one of said side rails to prevent any hori-

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zontal movement of said accessory tray assembly with respect to said side rails.

25. An accessory tray assembly in accordance with claim 23, including adjustment leveling means connected to said housing rear wall, and

said adjustment leveling means being adapted to securely engage the underside of said step to prevent any vertical movement of said tray assembly with respect thereto.

26. An accessory tray assembly in accordance with claim 21, wherein

the most outwardly projecting portion of said front wall member is disposed substantially flush with

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and/or slightly recessed with respect to the leading front edge of said step.

27. An accessory tray assembly in accordance with claim 21, wherein

said side rails have a plurality of preselectively formed openings therein disposed in predetermined relationship with selected ones of said steps,

said preselectively formed openings enabling said tray assembly to be selectively secured with respect to the undersides of said selected ones of said steps.

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