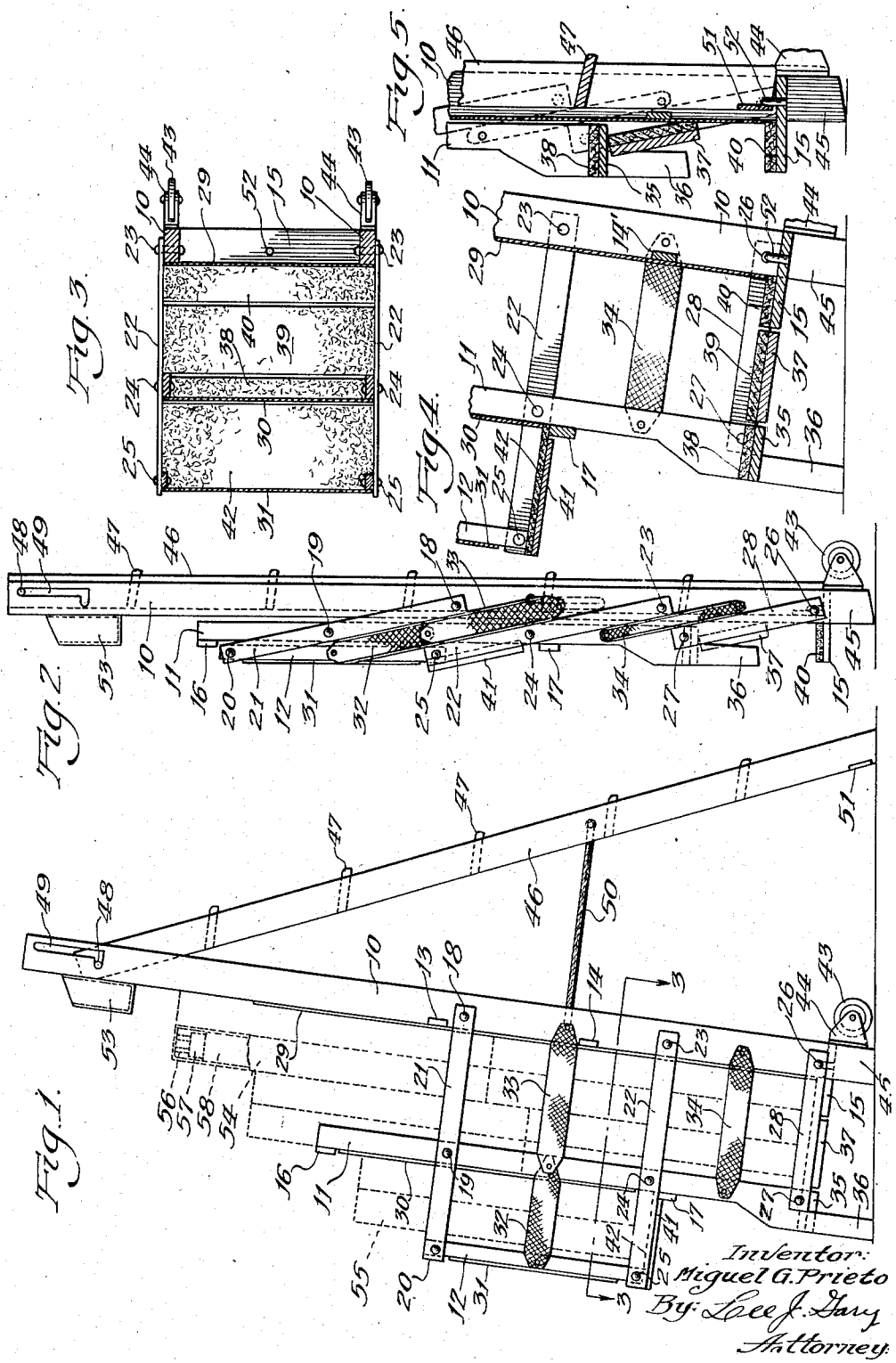
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CARRIER

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Inventor:
Miguel G. Prieto
By: Lee J. Davy
Attorney

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CARRIER

Miguel G. Prieto, Chicago, Ill.

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This invention relates to an improved device for transporting, storing and handling elongated fragile objects, and more particularly to a collapsible carrier or hand truck constructed, arranged and adapted for the handling and servicing of fluorescent lighting tubes.

The handling and servicing of fluorescent lighting tubes which are now being extensively employed in industrial plants, and the servicing of such lighting installations by service men in such industrial installations at the present time entails considerable complaint due to the fact that fluorescent lighting tubes and particularly their projecting end structure or pins which are extremely fragile are often damaged inadvertently by shock such as one tube being knocked against another or against surrounding objects, particularly in industrial plants which are at the present time extremely crowded due to economies of space or necessity for utilizing all available space. Such damage or shock is often not visible or noticed at the time of occurrence, and failure of the tube to function is often improperly charged to faulty tube manufacture. Inadvertent damage or breakage to these fluorescent lighting tubes which in commercial installations may be quite long—such as, for example, up to 60 inches in length—is often caused by reason of the difficulty in protecting the end pins and/or end metal cap or tube end portions by the service man when he carries several of these long tubes in his hand and travels between crowded factory aisles and large machine installations and thereafter in such places is required to install or replace a tube. Safe, convenient and effective storage of these elongated tubes also often times presents a considerable problem in busy industrial plants.

With the foregoing in view it is an object of my invention to provide a convenient hand truck or mobile container of relatively narrow width and of elongated construction comprising one or more pockets within which fluorescent lighting tubes may easily be inserted and carried in an orderly fashion and in a safe and protected manner to the point of installation or replacement.

Another object is to provide a hand truck or carrier of the class described which may be vertically positioned or set up at the place where the tubes are to be installed or replaced, and to permit the transported tubes to be withdrawn in an orderly manner and one which is not conducive to breakage of the fragile portions thereof. This may be most conveniently accomplished with the aid of an extensible ladder provided in combination with my tube carrier and foldable therein, and which when used therewith lends stability thereto in its vertically erected position.

A further object of my invention relates to the foldable and collapsible nature of my hand truck or carrier whereby it may be conveniently stored in a minimum amount of space when not in use. Other objects relate to details of construction, arrangement of parts and the economies thereof which will be apparent from a further consideration of the following specification and drawing wherein:

Fig. 1 is a side elevation of my portable carrier in its fully expanded and vertically erected position.

Fig. 2 is a side elevation of my device in fully collapsed position.

Fig. 3 is a transverse section on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary enlarged vertical section through the lower portion of my device.

Fig. 5 is a view similar to Fig. 4 in the collapsed position of my device.

Referring to the drawing, my improved fluorescent lighting tube handling device comprises a frame like structure which may be formed substantially wholly of wood and comprises at each side thereof vertical bars 10, 11 and 12. The vertical bars 10 which may be considered to form the bed of the carrier, are connected by a plurality of cross bars such as the bars 13 and 14, 14' and the base piece 15. The intermediate vertically extending bars 11 are joined together in a similar manner by means of the cross pieces 16 and 17, the latter extending preferably laterally of the vertical bars 11 to form a frame extension stop means. The vertically extending bars 12 may if desired be joined by similar cross cars, although such is not necessary as will be hereinafter more fully explained.

Extending transversely across the vertical bars 10, 11 and 12, at each side of the frame and pivotally engaged to each of these bars by suitable means such as the dowel pins 18, 19 and 20, is the link 21, and in a similar manner in spaced relation to the link 21 is the link 22 pivoted to the vertical bars 10, 11 and 12 at the points 23, 24 and 25, respectively. These links 21 and 22 extend intermediate the ends of the vertical bars 10 and 11 and endwise of the vertical bars 12. Adjacent to the foot portions of the vertical bars 10 and 11 and pivoted to them at 26 and 27, is the link 28.

Extending between the two vertical bars 10 and secured to them and/or the cross pieces 13 and

14 I suitably provide a bed closure or webbing member 29 which is preferably formed of such material as fibre board for convenience and economy. As indicated in the drawing, this closure board 29 preferably lies adjacent to the inner longitudinal edges of the bars 10, so as to leave an outwardly open pocket. In a similar manner I provide a fibre board closure 30 extending over and between the vertical bars 11. The front face of the vertical bars 12 may likewise be enclosed by means of a similar fibre board 31, although this and the other closure members 29 and 30 may simply be of fabric. However, since the portions 29, 30 and 31 or the areas covered thereby remain fixed they may be of rigid material such as the previously indicated fibre board or of course if desired other rigid material such as wood or slats may be employed. For the purpose of providing side closure means if desired, there may be provided strips of fabric or webbing which may be of relatively narrow width such as for example webbing 32 secured to the vertical bars 12 and 11 intermediate the links 21 and 22, and the strip of webbing 33 secured to the bars 11 and 12 also intermediate links 21 and 22. In a similar manner a strip of webbing 34 may be secured to the vertical bars 11 and 10 intermediate the links 22 and 28.

For the purpose of providing a bottom closure between the vertical bars 11 and 10 and to permit the device as a whole to be readily collapsed this base is preferably formed of at least three spaced apart sections. Thus as previously indicated, one section comprises the portion 15 which extends between the vertical bars 10. In a similar manner I provide a baseboard portion 35 which extends between the vertical bars 11 adjacent their base or leg portions 36, the portion 35 acting as an additional cross or tie member for the bars 11. A complementary baseboard piece 37 is secured between and to the links 28 intermediate the points of pivot 26 and 27, and in a manner whereby the baseboard portion 37 is in alignment with but edgewise slightly spaced apart from the baseboard portions 15 and 35. These baseboard portions 15 and 35 also act as frame alignment or stop means for limiting the degree of pivotal movement when the device is opened or extended, the link 28 being limited in further downward movement by abutting on the baseboards 15 and 35, portions of which extend laterally to the outer faces of links 28. Supported on these baseboard portions 35, 37 and 15 are the cushion portions 38, 39 and 40 respectively. The base of the outer extension of the links 22 which extend from the vertical bars 11 to the vertical bars 12 are likewise provided with a base closure 41 which may be of fibre board, and may be provided in a similar manner with a layer of cushioning material 42, the edge of the baseboard 41 being slightly spaced from the cross bar 17.

As indicated in the drawing, the base of the vertical bars 11 terminate in the legs 36, these legs being preferably offset in a direction away from the vertical bars 10 to permit full collapsibility without interference by the baseboard portion 37 or necessity for slotting or reducing the width of the latter at any portion, and thereby eliminating any openings in the base portions by means of which the tube end pins might become damaged. The legs 36 and 45 may be slightly inclined at the base as indicated. This stability is further aided, if such becomes necessary, by means of the rollers 43, engaged within suitable mounts 44 and secured adjacent to the bottom or leg portions 45 of the vertical bars 10. The purpose of the rollers 43 is of course primarily for permitting the carrier to be conveniently moved, but since they extend laterally from the vertical bars, 10, they do not deter from, but rather aid the rigidity of the device when it is mounted in the substantially vertical position as indicated in Fig. 1.

In further combination with my device I provide a nested ladder in association therewith comprising sides 46 and a plurality of steps 47, the sides 46 being of a length and spaced apart in a manner so as to permit the ladder to be nested within and between the vertical bars 10. The upper ends of the ladder sides 46 are provided with dowels or the like lateral projections 48 which extend into and ride within the bayonet slots 49 provided in the vertical bars 10 adjacent to their upper ends. Thus when the ladder is extended angularly to the carrier body as limited by the members 50, which may be formed of indicated cord, or conventional pivoted rigid link pairs, the projections 48 are extended into the horizontal run of the bayonet slot 49. When it is desired to collapse the ladder within the vertical bars 10, the projections 48 are caused to be moved to the upper extent of the vertical run of bayonet slot 49, and the tie bar 51 which extends between the ladder portions 46 adjacent their lower ends and inner edges is elevated above and then permitted to drop rearwardly of the pin 52 extending vertically from the baseboard 15 to hold the ladder locked in nested position. For convenience in handling accessories, replacement parts, dry and wet rags, etc., I provide the compartment 53 extending between and adjacent to the upper ends of the vertical bars 10.

It will readily be observed from Fig. 1 of the drawing which illustrates the preferred form of my device in its fully extended form and mounted in substantially vertical position with the ladder fully extended, that my device comprises two tube carrying compartments. The major compartment is an elongated one adapted to handle the longest fluorescent lighting tubes, such as their cartons indicated by the dotted lines 54, and generally extends between the vertical bars 10 and vertical bars 11. For the purpose of conveniently handling shorter tubes and without intermingling them with the longer ones a second or smaller compartment is provided between the vertical bars 11 and the vertical bars 12 wherein the shorter fluorescent lighting tubes indicated by the cartons of the dotted lines 55 may be carried. As previously indicated, on the floor or baseboards of each of these compartments there is supported suitable padding material which additionally serves to cushion the fluorescent lighting tubes and serves to prevent injury to the end pins 56, cap 57 and other internal portions of the tube 58 indicated by the dotted lines in the broken elongated carton 54.

For the purpose of collapsing my device when not in use, it will readily be seen that the vertical bars 11 and 12 and their associated cross bars and base portions may all be swung upwardly about their points of respective pivotal engagement of the vertical bars with the links 21, 22 and 28, the links 28 carrying with them the baseboard portion 37, the baseboard portion 15 remaining rigid in horizontal position since the latter is in fixed engagement between the vertical bars 10, the whole folding up into the compact

form shown in Fig. 2. In this position the collapsed device may be hung up or stored away in any suitable place. In a like manner the device illustrated in Fig. 1 with only the ladder collapsed, may be used for the storing of fluorescent lighting tubes and set into any convenient place, or if desired the expanded carrier structure can be hung from some suitable mounting support, by providing, for example, a suitable cross bar between the upper edges of the vertical bars 10 not illustrated, or in any other convenient manner. For transporting the tubes to the place of installation the carrier may be simply gripped by the upper extensions of the vertical bars 10 and moved on the rollers 43 and thereafter elevated vertically and rested on the legs 36 and 45, with or without the aid of the ladder 46.

Although for the purpose of illustration I have described in the foregoing specification and shown in the drawing the preferred form of my invention wherein my collapsible carrier has been provided with two tube carrying compartments one relatively shorter than the other, their respective lengths may be varied and in a similar manner I may provide a third compartment, or my collapsible carrier may be formed to provide a single elongated compartment, all within the scope of my invention.

I claim as my invention:

1. A mobile container of the class described comprising a rigid substantially flat elongated bed portion defining the rear side wall of the container, and a collapsible and extensible superstructure carried thereon to form a receptacle therewith, said superstructure including at least one frame portion of equal width to and extending in parallel spaced relation to said bed and in pivoted linked engagement therewith and a collapsible bottom adapted to extend perpendicularly to and between said bed and parallel frame portion, said bed portion and adjacent parallel frame portion terminating in foot portions for supporting the container in a generally upright and in extended condition, the bed foot portions comprising wheels mounted in association therewith and extending laterally and rearwardly of said bed portion for transporting the container.

2. A mobile container of the class described comprising a rigid substantially flat elongated bed portion defining the rear side wall of the container, and a collapsible and extensible superstructure carried thereon to form a receptable therewith, said superstructure including at least one frame portion of equal width to and extending in parallel spaced relation to said bed and in pivoted linked engagement therewith and a collapsible bottom adapted to extend perpendicularly to and between said bed and parallel frame portion, the said bed portion and adjacent parallel frame portion terminating in rigid foot portions for vertically supporting the container in extended position, the bed foot portions comprising rearwardly mounted and laterally extending wheels for transporting the container.

3. A mobile container of the class described comprising a rigid elongated bed portion and a collapsible and extensible superstructure carried thereon to form a double compartmented receptacle therewith, said superstructure including two progressively shorter frame portions of equal width to and extending in parallel spaced relation to said bed and in pivotal engagement therewith and with each other through laterally and transversely extending unitary rigid links, and a collapsible bottom for each compartment, the bottom for the compartment extending between the bed and its adjacent parallel frame portion being formed of a plurality of separable spaced segments extending parallel to said bed, one of said segments being in fixed relationship therewith and another being carried by pivotal link means and foldable against the bed.

4. A mobile container of the class described comprising a rigid elongated bed portion and a collapsible and extensible superstructure carried thereon to form a double compartmented receptacle therewith, said superstructure including two progressively shorter frame portions of equal width to and extending in parallel spaced relation to said bed and in pivotal engagement therewith and with each other through laterally and transversely extending unitary rigid links, and a collpasible bottom for each compartment, the said bed portion and adjacent parallel frame portion terminating in rigid foot portions for vertically supporting the container in extended position, the bed foot portions comprising rearwardlly mounted and laterally extending wheels for transporting the container.

5. A mobile container of the class described comprising a rigid bed frame portion defined laterally by a pair of elongated parallel spaced bars, and a superstructure carried thereon and foldable against it and adapted when extended to form a receptacle therewith, said superstructure including a pair of spaced relatively short bars defining a frame parallel to said bed, at least one pair of longitudinally spaced rigid links extending transversely of and in pivotal engagement with each group of lateral defining bars of said frames, and a collapsible bottom formed of a plurality of separable spaced segments extending parallel to said bed, one of said segments being in fixed relationship therewith and another being carried by pivotal link means and foldable against the bed.

MIGUEL G. PRIETO.