This invention relates to a novel and useful tool for lifting manhole covers and more specifically to a tool primarily designed to provide an efficient means lifting heavy manhole covers and for transporting manhole covers from one location to another.

The tool of the instant invention comprises a lightweight dolly frame which includes an elongated tubular lever handle having a depending upright generally V-shaped fulcrum leg assembly secured thereto. The V-shaped fulcrum leg assembly includes a pair of inclined legs secured together at one pair of corresponding ends to form an apex of the leg assembly and at the other pair of corresponding ends to the lever handle at points spaced longitudinally therealong. One of the ends of the legs remote from the apex of the leg assembly is secured to one end of the lever handle and a dual dolly wheel assembly is carried by the apex of the leg assembly and defines a fulcrum point about which the lever handle may be pivoted. The end of the lever handle remote from the depending fulcrum leg assembly defines a handle portion thereof while the first mentioned end of the lever handle has one pair of corresponding ends of a pair of flexible tension members secured thereto. Further, the free ends of the tension members are provided with suitable hook means adapted for engagement with a manhole cover. The dual dolly wheel assembly carried by the apex of the leg assembly includes a pair of laterally spaced ground engaging support wheels disposed on opposite sides of and closely embracing the apex portion of the leg assembly and the support wheels are journaled for rotation about an axis extending transversely of the median plane of the leg assembly.

In this manner the tool, whose handle and legs are constructed of tubular stock, may be constructed of lightweight materials and in a manner whereby its storage in a service truck or the like will be facilitated due to the fact that the tool will require very little storage room. By spacing the support wheels of the leg assembly on opposite sides of the apex of the leg assembly and in close embracing relation thereto, the total width of the tool is maintained at a minimum.

The main object of this invention is to provide a tool for assisting in the removal of manhole covers. A further object of this invention is to provide a tool in accordance with the immediately preceding object which is constructed in a manner whereby it may be readily stored in a minimum of space.

A still further object of this invention is to provide a tool for removing manhole covers which may also be utilized for transporting a manhole cover short distances.

A final object to be specifically enumerated herein is to provide a tool in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the tool of the instant invention shown in position to be engaged with a manhole cover;

FIGURE 2 is an enlarged fragmentary sectional view taken substantially upon the plane indicated by the section line 2—2 of FIGURE 1;

FIGURE 3 is an enlarged fragmentary sectional view taken substantially upon the plane indicated by the section line 3—3 of FIGURE 1; and

FIGURE 4 is a fragmentary vertical sectional view of one side of a manhole cover showing one of the flexible tension members of the tool operatively engaged therewith.

Referring now more specifically to the drawings the numeral 10 generally designates a manhole cover which is shown in FIGURE 1 in position closing an opening 12 formed in a surface 14 such as a street or sidewalk. The tool of the instant invention is generally designated by the reference numeral 16 and is primarily designed to assist in the lifting of the manhole cover 10 from the opening 12.

The tool 16 comprises a lightweight dolly frame 18 which includes an elongated tubular lever handle 20. The lever handle 20 includes a first end portion 22 which defines a handle and a second end portion 24. A depending upright generally V-shaped fulcrum leg assembly generally referred to by the reference numeral 26 is provided and includes a pair of legs which are oppositely inclined relative to the lever handle 20 and are secured together at one pair of corresponding ends defining an apex of the leg assembly. The other pair of corresponding ends of the legs 28 and 30 of the leg assembly 26 are secured to the lever handle 20 at points spaced longitudinally therealong and it will be noted that the upper ends of the legs 28 is secured to the second end portion 24 of the lever handle 20 while the upper end of the leg 28 is secured to the lever handle 20 intermediate its opposite ends.

It is to be understood that the ends of the legs 28 and 30 remote from the lever handle 20 may be secured together in any convenient manner such as by welding and also that the legs 28 and 30 are constructed of tubular stock.

A dual wheel assembly generally referred to by the reference numeral 34 is provided and includes a generally inverted U-shaped brace member referred to in general by the reference numeral 36 which includes a pair of upstanding legs 38 and 40 interconnected at their upper ends by means of a bight portion 42. The bight portion 42 is centrally apertured as at 44 and receives there through the lower end of the leg 28. The bight portion 42 is rigidly secured to the leg 28 in any convenient manner and a transverse axle assembly generally referred to by the reference numeral 46 has its opposite ends rigidly supported from the lower ends of the legs 38 and 40. The axle assembly is provided with a head 48 on one end and a threaded shank portion 50 on the other end in which there is secured a suitable threaded nut 52. A pair of ground engaging support wheels 54 and 56 are rotatably journaled on the axle assembly 46 on opposite sides of the lower extremities of the legs 28 and 30 defining the apex of the leg assembly 26. A pair of spacer members 58 are disposed between the ground engaging wheels 54, 56 and opposite sides of the lower ends of the legs 28 and 30 and a second pair of spacer members 60 are provided and disposed between the ground engaging wheels 54 and 56 and the legs 38 and 40.

The mid-portion of the axle assembly 46 is secured through the apex of the leg assembly 26 defined by the intersection of the legs 28 and 30 and a pair of inclined brace members 62 and 64 are secured between the opposite ends of the bight portion 42 and the corresponding sides of the legs 28 at a point spaced above the bight portion 42.

The second end portion 24 of the lever handle 20 has
a pivot bolt 66 secured therethrough and a pair of hanger members 68 and 70 are pivotally secured to the second end 24 of the lever handle 20 by means of the pivot pin 56. A pair of flexible chain tension members 72 and 74 have one pair of corresponding ends secured to the hangers 68 and 70 and the free end of each tension member 72 and 74 is provided with a generally J-shaped hook member 76 for engagement with the manhole cover 10.

From FIGURE 4 of the drawings it will be noted that each of the manhole covers 10 is provided with a pair of apertures 78 and that the inner end of each aperture 78 is defined by an annular rib 80 with which the hook end portion of the J-shaped hook members 76 are engaged.

In operation, the tool 16 may be rolled to a point adjacent the manhole cover 10 as shown in FIGURE 1 of the drawings. Then, the first end portion 22 of the lever-handle 20 may be raised in order to lower the J-shaped hook members 76 through the apertures 78 and into engagement with the annular ribs 80. Then, the first end 22 of the lever handle 20 may be forced downwardly in order to pivot the tool 16 about the fulcrum point defined by the supporting wheels 54 and 56 and raise the second end portion 24 of the lever handle 20 relative to the surface 14 thereby lifting the manhole cover 10 out of the opening 12. It is of course to be understood that the end of the lever handle 20 remote from the tension members 72 and 74 may be made as long as desired in order to provide the desired amount of mechanical advantage for lifting heavy manhole cover.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A tool for assisting in the removal of manhole covers, said tool comprising a lightweight dolly frame, said frame including an elongated lever handle, a depending upright generally V-shaped fulcrum leg assembly defining a pair of legs inclined oppositely relative to said lever handle and secured together at one pair of corresponding ends defining an apex of said leg assembly and to said lever handle at the other pair of corresponding ends at points spaced longitudinally along said lever handle, one pair of leg ends being secured to one end of said lever handle, a dual dolly wheel assembly carried by the apex of said leg assembly and including a pair of laterally spaced ground engaging support wheels disposed on opposite sides of and closely embracing said apex and journaled for rotation about an axis extending transversely of the medial plane of said leg assembly, and a pair of flexible tension members secured at one pair of corresponding end portions to said one end of said lever handle and including hook means on the other pair of corresponding ends adapted for removable engagement with a manhole cover, said dolly wheel assembly including an inverted U-shaped brace member having a pair of upstanding legs interconnected at their upper ends by means of a bight portion extending transversely of said medial plane, said bight portion being centrally apertured, receiving therethrough the lower end of one of said legs at a point therealong spaced from said apex, and rigidly secured to said one leg, a transverse axle assembly having its opposite ends supported from the lower ends of the last mentioned legs, said ground engaging support wheels journaled on the opposite end portions of said axle assembly inwardly of said last mentioned legs.

2. The combination of claim 1 wherein the mid-portion of said axle assembly intermediate said ground engaging support wheels is secured through said leg assembly apex.

3. The combination of claim 2 wherein said flexible tension members are pivotally secured at said one pair of corresponding ends thereof to opposite sides of said one end of said lever handle.

4. The combination of claim 3 including a pair of inclined brace members secured between the opposite ends of said bight portion and the corresponding side of said one leg at a point spaced above said bight portion.

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