United States Patent [19]

Meredith

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[45] **Jan. 21, 1975**

[54] **JACK STRUCTURE**

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[52] **U.S. Cl.** ..... **254/4 R,** 254/148

[51] **Int. Cl.** **B66f 7/02**

[58] **Field of Search** ..... 254/4 R, 4 B, 4 C, 58, 254/47, 143, 148; 214/15; 182/195; 403/104–109

[56] **References Cited**

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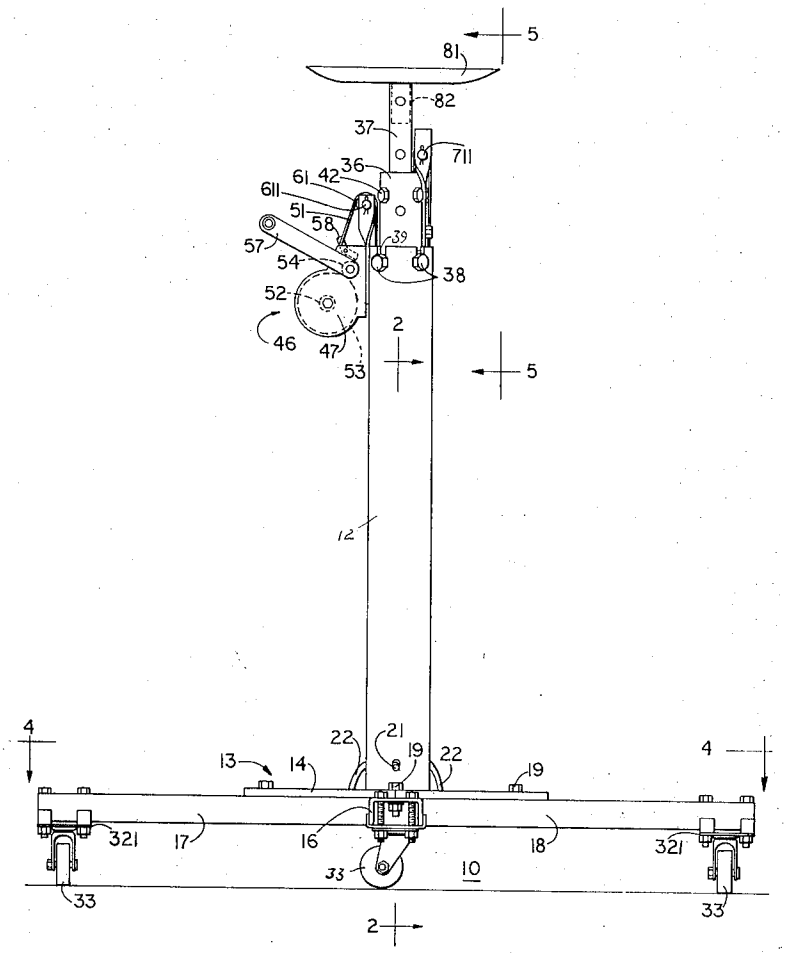
Assistant Examiner—Robert C. Watson
Attorney, Agent, or Firm—James W. Pearce; Roy F. Schaeperklaus

[57] **ABSTRACT**

A jack including an elongated hollow upright base section, an elongated tubular intermediate section and an inner section mounted for telescopic movement inside the base section. A cable runs from a winch on the base section over pulleys at lower and upper ends of the intermediate section to a cable anchor mounted on the inner section adjacent a lower end portion thereof. When the winch is turned, the inner and intermediate sections are raised and lowered. Transverse openings in the inner and intermediate sections can receive a pin which causes the inner and intermediate sections to move together and can rest in the base section to limit downward movement of the inner and intermediate sections.

4 Claims, 7 Drawing Figures



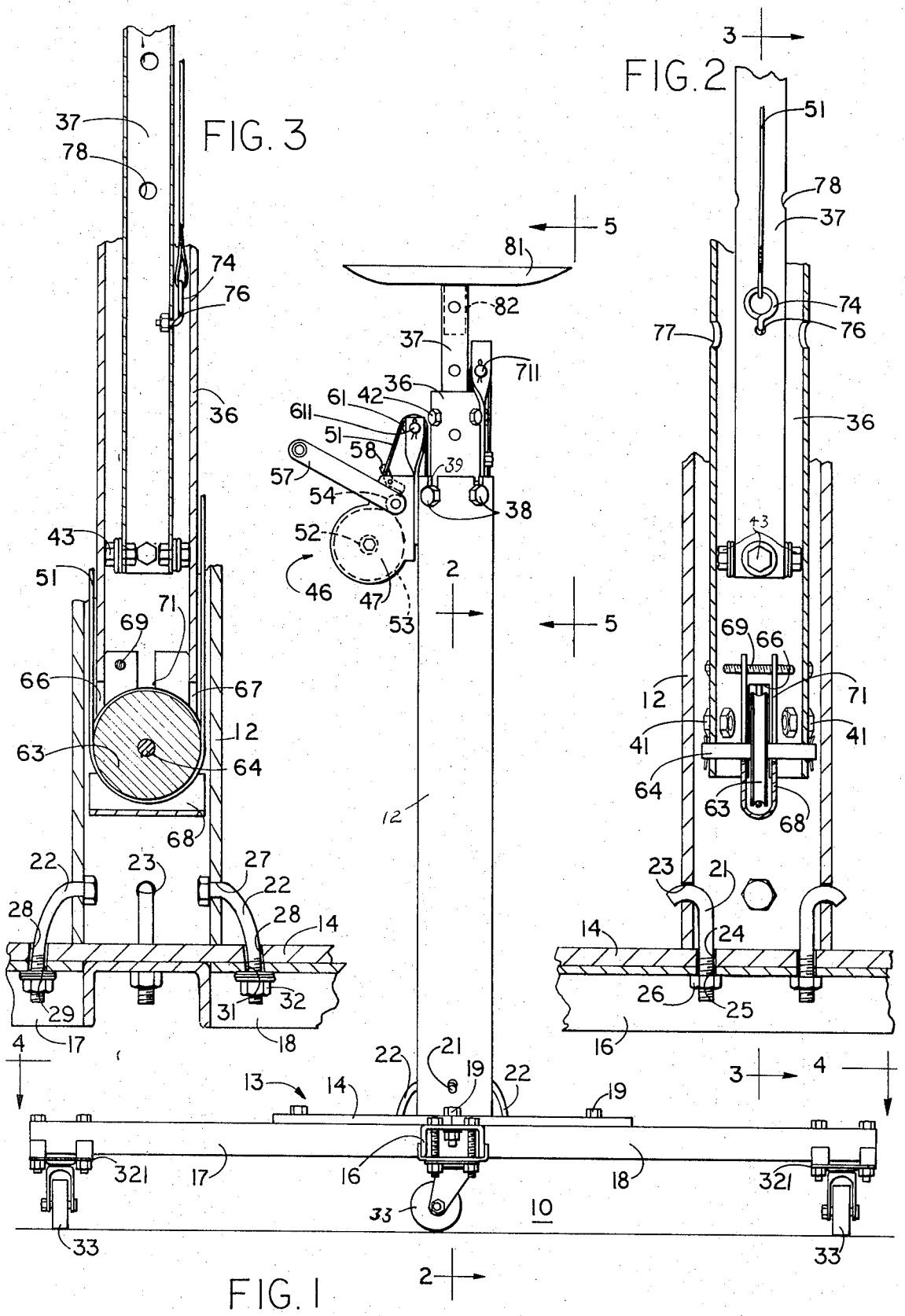


FIG. 3
FIG. 2
FIG. 1
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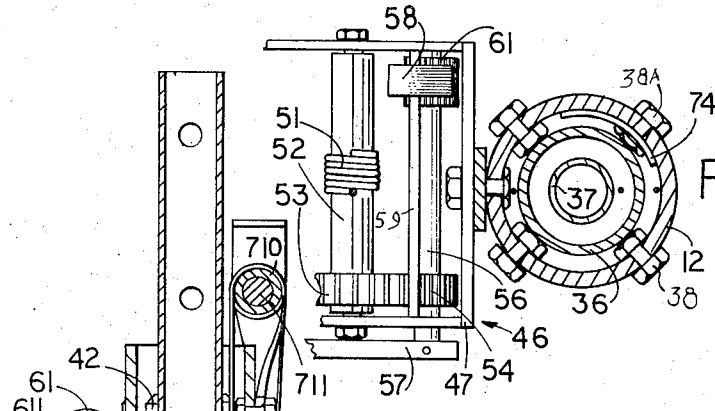

FIG. 7

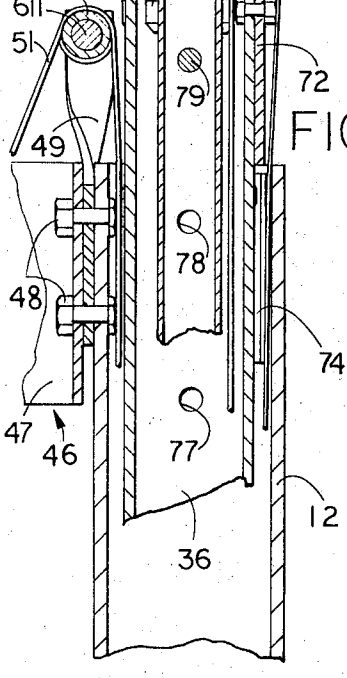

FIG. 6

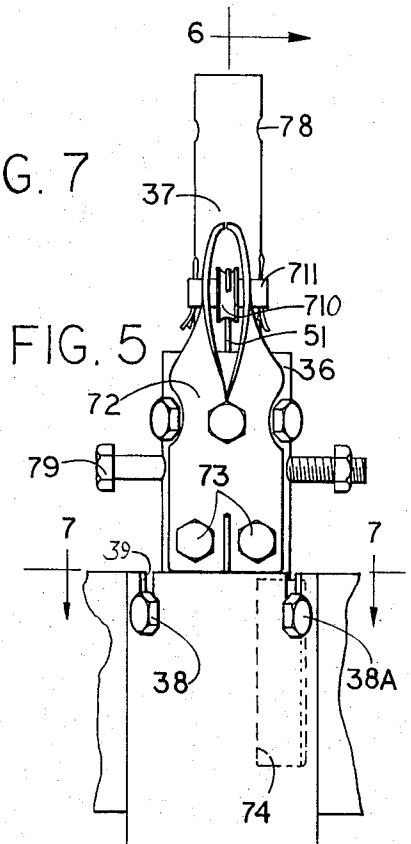

FIG. 5

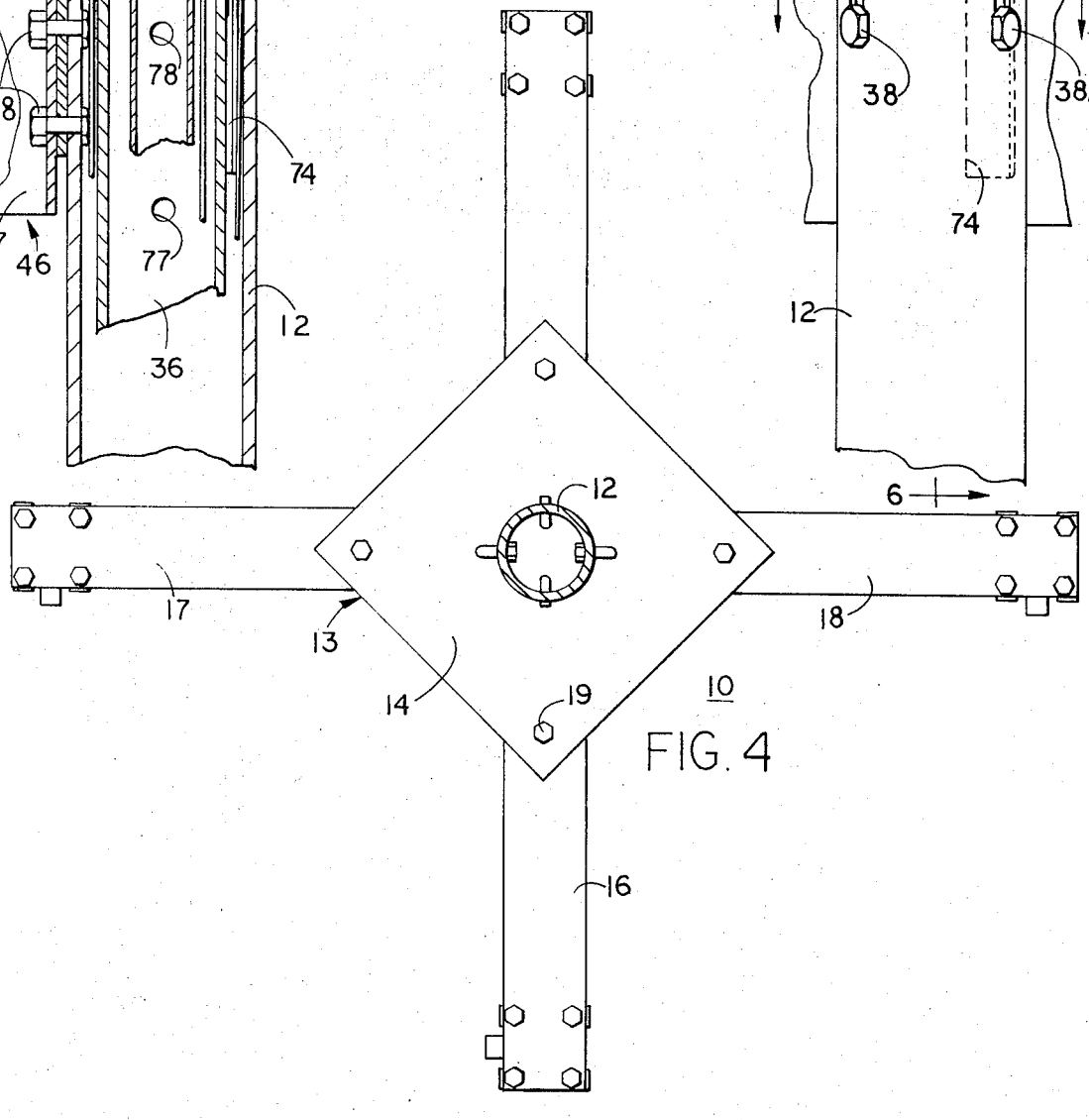

FIG. 4

JACK STRUCTURE

This invention relates to a jack structure.

An object of this invention is to provide a cable operated jack having a plurality of telescoping sections.

A further object of this invention is to provide such a jack which can be rolled into position beneath an article to be supported thereon.

Briefly, this invention provides a jack structure which includes an upright tubular base section inside which inner sections telescope. The base section is mounted on a wheeled carriage so that the jack can be rolled into position to receive a load and when carrying the load. A winch mounted on the base section operates a cable which extends downwardly inside the base section to pulley means mounted on a lower end portion of an intermediate tubular telescoping section, upwardly from the pulley means to a second pulley means at an upper end of the intermediate section and downwardly to a cable anchor on an inner telescoping section in a lower portion thereof.

The above and other objects and features of the invention will be apparent to those skilled in the art to which this invention pertains from the following detailed description and the drawings, in which:

FIG. 1 is a view in side elevation of a jack constructed in accordance with an embodiment of this invention, an article supporting pan being shown in connection therewith;

FIG. 2 is a view in section taken on the line 2—2 in FIG. 1;

FIG. 3 is a view in section taken on the line 3—3 in FIG. 2;

FIG. 4 is a view in section taken on a line 4—4 in FIG. 1;

FIG. 5 is a view in side elevation of the jack looking in the direction of the arrows 5—5 in FIG. 1 with the pan being removed, a stop pin being shown in association with the jack, a cable being broken away for clarity;

FIG. 6 is a view in section taken on the line 6—6 in FIG. 5; and

FIG. 7 is a view in section taken on the line 7—7 in FIG. 5, details of lower end portions of telescoping members being omitted for clarity.

In the following detailed description and the drawings, like reference characters indicate like parts.

In FIG. 1 is shown a jack 10 constructed in accordance with an embodiment of this invention. The jack includes an upright tubular base section 12 which is mounted on a carriage 13. The carriage 13 includes a rigid base plate 14 to which channel-shaped frames 16, 17, and 18 are attached by bolts 19. The lower end of the base section 12 rests on the plate 14 and is held in place thereon by hookshaped bolts 21 (FIG. 2) and curved hold-down bolts 22 (FIG. 3). The hook-shaped bolts 21 (FIG. 2) extend through openings 23 in the lower end portion of the base section 12, holes 24 in the base plate 14, and holes 25 in the channel-shaped frame 16 and are drawn downwardly by nuts 26 threaded thereon. The curved hold-down bolts 22 (FIG. 3) extend through openings 27 in the lower portion of the base section 12, openings 28 in the base plate 14, and openings 29 and 31 in the channel-shaped frames 17 and 18, respectively, and are drawn downwardly by nuts 32 threaded thereon. At outer ends of the channel-shaped frames 16, 17, and 18 (FIG. 1) are

mounted caster assemblies 321 supported by casters 33, which support the carriage 13.

A tubular intermediate telescopic section 36 (FIGS. 2 and 3) is slideably mounted inside the base section 12, and a tubular inner telescopic section 37 is slideably mounted inside the intermediate section 36. Spacer bolts 38 (FIG. 5) mounted in slots 39 in the upper end portion of the base section 12 and spacer bolts 41 (FIG. 2) mounted in openings (not shown in detail) in the lower portion of the intermediate section 36 steady the intermediate section. Spacer bolts 42 (FIG. 1) mounted in openings (not shown) in the upper portion of the intermediate section 36 and spacer bolts 43 (FIG. 3) mounted in openings (not shown) in the lower end portion of the inner section 37 steady the inner section.

A winch 46 (FIGS. 1, 6, and 7) is mounted on one side of the base section 12. The winch 46 includes a generally channel-shaped housing 47. Bolts 48 (FIG. 6) attach the housing 47 and a pulley support bracket 49 to the side of the base section 12. An end portion of a cable 51 is attached to a main winch shaft 52 (FIG. 7) rotatably mounted in the housing 47. A spur gear 53 mounted on the main winch shaft 52 (FIGS. 1 and 7) is driven by a pinion 54 mounted on a pinion shaft 56 rotatably mounted in the housing 47. A crank 57 mounted on the pinion shaft 56 can be turned to operate the winch. A pawl 58 mounted on a pawl shaft 59 (FIG. 7) can engage a ratchet wheel 61 mounted on the pinion shaft 56 to arrest turning of the main winch shaft 52 in a clockwise direction as shown in FIG. 1.

From the winch 46, the cable 51 passes over a pully 61 rotatably mounted on a shaft 611 at the upper end of the pulley support bracket 49 and downwardly therefrom inside the base section 12. The cable 51 passes downwardly between the inner wall of the base section 12 and the outer wall of the intermediate section 36 to a pulley 63 (FIGS. 2 and 3) rotatably mounted on a shaft 64, which extends diametrically and spans walls of the intermediate section 36 adjacent the bottom thereof. The pulley 63 extends through slots 66 and 67 (FIG. 3) in the lower portion of the wall of the intermediate section 36. A generally channel shaped cable guide 68 surrounds the pulley 63 to hold the cable in position on the pulley 63. The cable guide 68 is held in position inside the intermediate member 36 by a cross bolt 69. Slots 71 in flanges of the cable guide 68 receive the shaft 64. The cable guide 68 also serves as a bottom stop limiting downward movement of the inner section 37.

From the pulley 63, the cable 51 passes upwardly to and over a pulley 710 (FIGS. 5 and 6) rotatably mounted on a shaft 711 carried by a bracket 72 attached to the intermediate telescoping section 36. Bolts 73 (FIG. 6), which attach the bracket 72 to the intermediate section 36, serve as stops engageable with the base section 12 to limit downward movement of the intermediate section 36. Upward movement of the intermediate section 36 is limited by engagement of one of the spacer bolts 41 (FIG. 2) with a plate 74 (FIGS. 5, 6 and 7) attached to the inside of the base section 12 by a bolt 38A (FIGS. 5 and 7). The cable 51 (FIG. 5) extends downwardly from the pulley 71 between the inner wall of the intermediate section 36 and the outer wall of the inner section 37 to a cable anchor 74 (FIGS. 2 and 3), which is mounted in a bore 76 in the lower portion of the inner telescoping member 37. The cable

anchor 74 is sufficiently spaced above the spacer bolts 43 that the spacer bolts 43 always remain sufficiently below the top of the intermediate section 36 to steady the inner section 37.

The intermediate section 36 and the inner section 37 are provided with transverse openings 77 and 78, respectively. A pin 79 (FIGS. 5 and 6) can be extended through selected ones of the openings 77 and 78 to cause the sections 36 and 37 to move together. The pin 79 can also engage the upper end of the base section 12 to act to prevent lowering of the sections 36 and 37 below selected level. The intermediate and inner sections move independently so that openings 77 of the intermediate section 36 can be aligned with selected openings 78 of the inner section 37.

An appropriate pan 81 (FIG. 1), which is constructed to support an article (not shown), such as a vehicle transmission, to be carried by the jack, can be mounted on the upper end portion of the inner section 37. A pin portion 82 of the pan 81 fits into the upper end portion of the inner section 37.

The jack 10 can be rolled into position beneath the article to be supported thereon. Then, the crank 57 can be turned to raise the telescoping sections under the article to support the article. When the article has been released into the pan 81, the pawl 58 can be released and the crank 57 can be permitted to turn in the opposite direction to permit the telescoping sections to move downwardly to lower the article to a level at which work can be done on the article. The pin 79 can be inserted in appropriate holes 77 and 78 in the telescoping sections to prevent inadvertent lowering of the telescoping sections. The jack can then be rolled to a position where the work can be done on the article. When the article is to be returned into operative position, the jack with the article thereon can be rolled back to beneath the operative position of the article. Then the pin 79 is removed, and the crank 57 is turned in the direction to cause raising of the telescoping inner and intermediate sections to raise the article into operative position.

The jack structure illustrated in the drawings and described above is subject to structural modification without departing from the spirit and scope of the appended claims.

Having described my invention, what I claim as new and desire to secure by letters patent is:

1. A jack which comprises an elongated hollow upright base section, an elongated tubular intermediate section mounted for telescopic movement inside the base section, an elongated inner section mounted for telescopic movement inside the intermediate section, a first pulley means mounted on a lower end portion of the intermediate section, second pulley means mounted on an upper end portion of the intermediate section, a winch mounted on the base section, cable means extending from the winch downwardly between the base section and the intermediate section and around the first pulley means, upwardly from the first pulley means to and over the second pulley means, and downwardly from the second pulley means to a cable anchor mounted on the inner section adjacent a lower end portion thereof, and means for turning the winch to cause raising of the inner and intermediate sections, the intermediate section and the inner section being provided with transverse alignable openings for receiving a pin to cause the inner and intermediate sections to move together, the inner section being raisable with respect to the intermediate section when the pin is removed and the winch is turned.

2. The combination with a jack as in claim 1 of a pin received in selected ones of the transverse openings in the intermediate and inner sections, the pin being engageable with the base section to limit downward movement of the intermediate and inner sections.

3. A jack as in claim 1 wherein a cable guide is attached to the lower end portion of the intermediate section and extends under the pulley means on the intermediate section to hold the cable thereon.

4. A jack as in claim 1 wherein there is a stop plate mounted on the interior of the base section adjacent an upper end thereof and between walls of the intermediate section and the base section, and there is a stop member mounted on and extending outwardly of the intermediate section adjacent a lower end thereof, the stop member engaging the stop plate to limit upward movement of the intermediate section.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,861,647 Dated January 21, 1975

Inventor(s) Meredith Fields

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Title Page, line [76], Inventor: "Fields Meredith," should be -- Meredith Fields, --;

same line, "515 East St.," should be -- 515 East Seventh St., --.

Signed and sealed this 18th day of March 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks

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