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Whitchurch et al.

[11] **3,830,468**

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[54] **TRAILER JACK**

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[52] **U.S. Cl.** ..... **254/98,** 248/354 R, 248/356

[51] **Int. Cl.** **B66f 3/08**

[58] **Field of Search** ..... 254/1, 98, 100; 248/354 R, 248/356

[56] **References Cited**

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1,765,200	6/1930	Bullough	248/356
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2,510,688	6/1950	Evans	248/354 R
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FOREIGN PATENTS OR APPLICATIONS

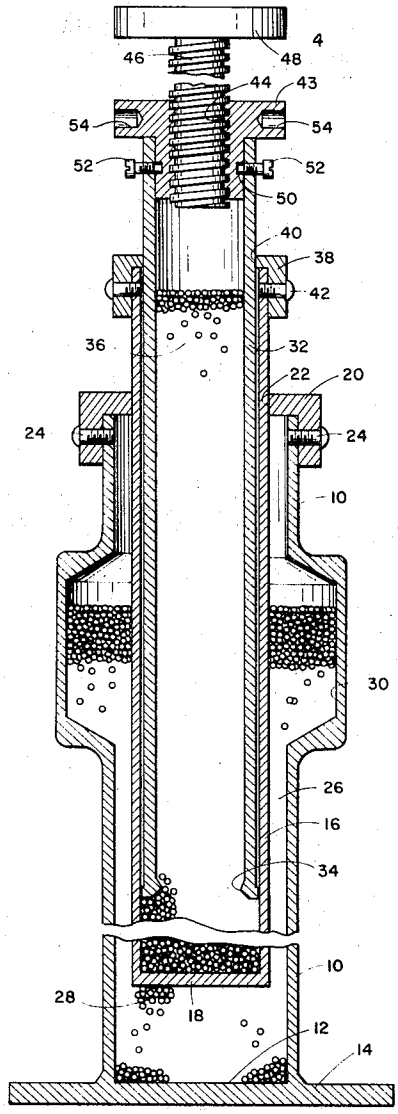
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Attorney, Agent, or Firm—Head & Johnson

[57] **ABSTRACT**

A jack comprising a lower upright tubular member closed at the lower end, an intermediate upright tubular member telescopically received in the lower member, the intermediate member being closed at the bottom, granular material within the annular area between the lower and intermediate member, the granular member falling to the lower end of the lower member as the intermediate member is withdrawn to thereby support the intermediate member in withdrawn position, an upper tubular member telescopically received in the intermediate member and granular material within the upper member and the lower portion of the intermediate member, the granular material falling to a lower portion of the intermediate member as the upper member is withdrawn to thereby support the upper member in the withdrawn position.

4 Claims, 3 Drawing Figures



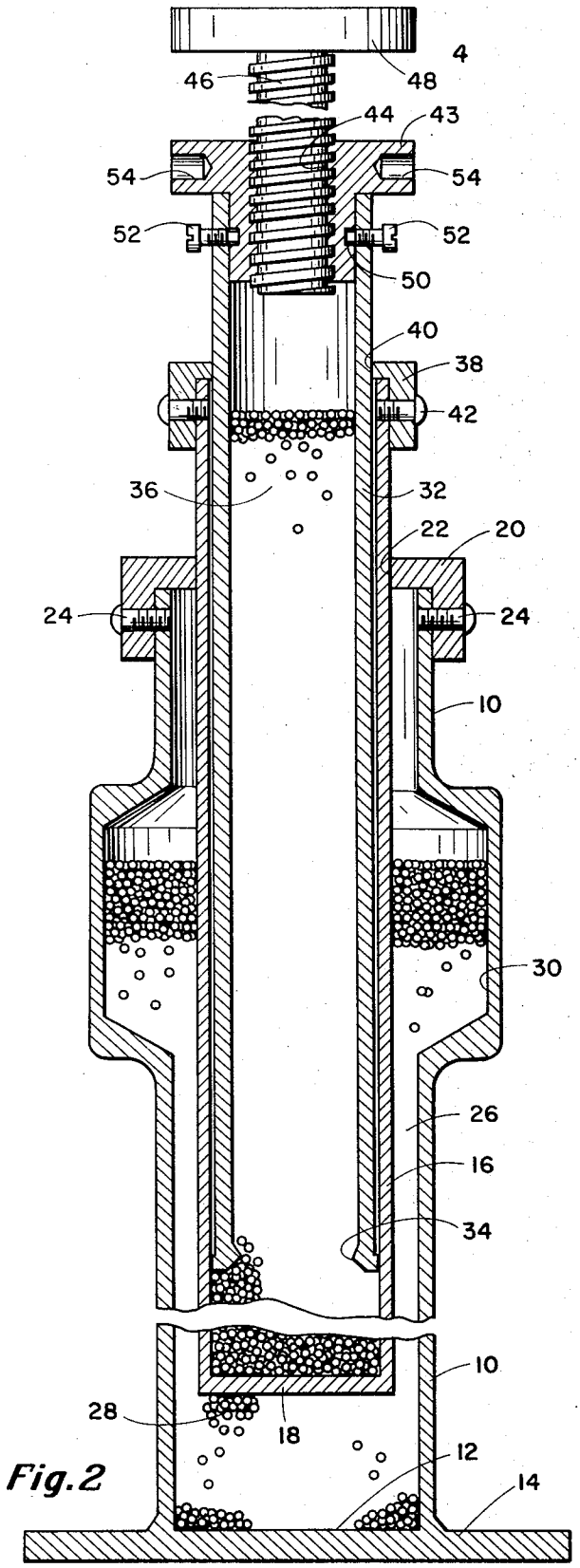


Fig. 2

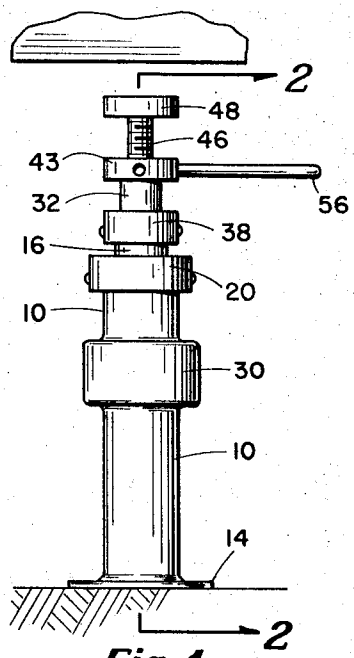


Fig. 1

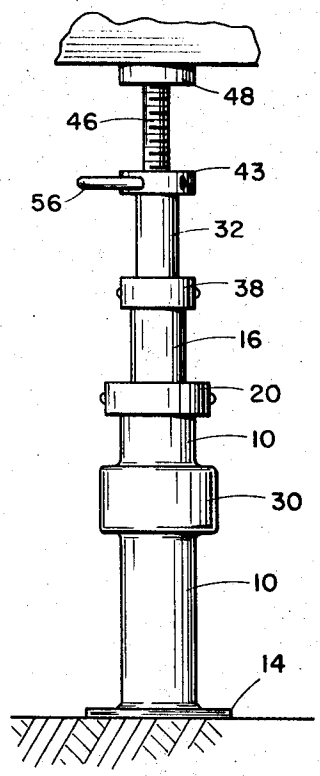


Fig. 3

TRAILER JACK

BACKGROUND, SUMMARY AND OBJECTS OF THE INVENTION

The invention relates to jacks of the type which may be used to support any item required to be supported at variable heights. As an example, the jack may be used for supporting house trailers, motor homes or other recreational vehicles and is particularly useful in leveling such vehicles to increase the comfort of the users.

Jacks may be arranged in a variety of ways including the use of screw thread arrangements for varying the height. Another type of jack in common use is the hydraulic jack wherein hydraulic fluid is used in a cylinder to raise a piston. Another common type of jack is the ratchet type. The ratchet jack includes a rack and pinion arrangement wherein weight supported by the jack is lifted as a movable portion of the jack moves up a stem having teeth formed on one edge.

These type of jacks exemplified by the screw type, hydraulic and ratchet jack are satisfactory and successful except that such jacks are relatively complicated and require mechanical portions which can easily get out of adjustment, and are subject to wear.

The present invention is directed to an improvement which does not require complicated mechanical apparatus and which is substantially free of wear. The present invention is towards a jack utilizing only tubular members and granular materials. Examples of such jacks may be seen in U.S. Pat. Nos. 1,765,200 and 2,510,688. The jacks shown in such previously issued U.S. patents utilize a singular tubular element movable in a singular base element with granular material therein. While such arrangements work satisfactorily, the known type of jacks of this kind limit the maximum tubular extension of the jack in relationship to the minimum extension when the jacks are in the nonextended position.

It is therefore an object of this invention to provide an improved jack.

More particularly, an object of this invention is to provide an improved jack of the type utilizing tubular elements and granular material including means wherein the ratio of the maximum tubular extension to the minimum length of the jack is greatly improved over known types of jacks utilizing granular material.

Another object of this invention is to provide a type of jack utilizing tubular elements and granular material including means wherein the extension of the tubular jack may be threadably adjusted.

Another particular object of the invention includes the provision of a jack having a reservoir portion for storage of granular materials in the lower tubular portion.

These and other objects will be fulfilled in the following description and claims, taken in conjunction with the attached drawings.

DESCRIPTION OF VIEWS

FIG. 1 is an elevational view of a jack of this invention in the retracted position.

FIG. 2 is a cross sectional view taken along the line 2—2 of FIG. 1.

FIG. 3 is an external view shown in FIG. 1 and showing the jack partially extended.

DETAILED DESCRIPTION

Referring to the drawings and first to FIGS. 1 and 2 the jack includes a lower upright tubular member 10. The member 10 is closed at its bottom 12 and the closed bottom may be provided with an enlarged base 14.

Received in the lower tubular member 10 is an intermediate upright tubular member 16 of an internal diameter less than the internal diameter of the lower member. The intermediate tubular member 16 is telescopically received in the lower member 10 and is closed at its bottom 18. Received at the upper end of lower member 10 is a first seal member 20 having an opening 22 therein. Intermediate tubular member 16 is slidably and sealably received in the opening 22. The first seal 20 may be held in place at the upper end of the lower member 10 such as by means of bolts, screws or rivets 24.

Received in the annular space 26 between the lower member 10 and intermediate member 16 is granular material 28. The granular material may be of any hard noncompacting substance, such as sand, metal shot, or other similar material.

In the illustrated arrangement the lower member 10 includes an enlarged diameter portion 30 between the upper and lower end. The enlarged diameter portion 30 serves as a storage area for granular material 28 so that more granular material may be stored in the annular space 26.

Telescopically received within intermediate tubular portions 16 is an upper upright tubular member 32. The upper member 32 is open at the lower end 34. The external diameter of the upper member 32 is slightly less but substantially equal to the internal diameter of the intermediate tubular member 16. The interior of the upper member 32 and the lower portion of intermediate member 16 is filled with granular material 36 of the same type as fills the annular area between the intermediate and the lower tubular members. The upper end of the intermediate member 16 is closed with a second seal member 38 having an opening 40 therein slidably and sealably receiving the upper tubular member 32. The second seal 38 may be held in position such as by means of bolts, screws, or rivets 42.

The upper end of the upper member 32 receives a bushing 43. The bushing has an internally threaded axial opening 44. Received in the opening 44 is an externally threaded screw member 46. The upper end of the screw 46 includes a lift face 48. The bushing 42 may be rotated relative to the upper member 32 and to the screw 46 so as to elevate or withdraw the screw. This permits the final length of the jack to be adjusted. It is understood that the use of the rotating bushing 42 and screw 46 is optional. To rotatably retain the bushing 42 an annular groove 50 is provided which receives the inner end of screws 52. As shown, the bushing 42 may include openings 54 which may receive a lever 56 (FIG. 1) as a means of rotating the bushing to threadably adjust the upper extension of the jack.

OPERATION

To contract the jack to its minimum length it is simply turned upside down and the portions pushed together, that is, the bushing 42 is pushed upwardly towards the base 14. In the embodiment including

screw **46** it may also be rotated fully inward so that the jack is in the maximum reduced length condition.

When the jack is upside down the granular material **12** falls into the annular area **26** thereby enabling the intermediate portion **16** to be moved fully inwardly within the lower member **10.** At the same time, with the jack upside down, the granular material **36** falls into the interior of the upper member **32** allowing the upper member to be inserted to the maximum depth within the intermediate member **16.** Thus the jack is very quickly and easily moved to its fully contracted condition. This is in contrast with the time required to reduce to its minimum a screw type jack, a hydraulic jack or other types of jacks.

The jack may be stored while not in use in the fully contracted condition. When it is desired to use the jack all that is necessary is that it be placed upright and manually pulled to the desired extended length. This can be accomplished by pulling upwardly on bushing **43.** As the bushing **43** is pulled upwardly the upper tubular member **32** is pulled up within the intermediate member **16.** As it is pulled upwardly granular material **36** is received in the lower portion of the intermediate member and builds up underneath the lower end **34** of the upper member **32.** When the desired height is reached the lower end of the upper member rests upon granular material **36** and supports weight applied to the jack. If the desired extension of the jack is not achieved by the maximum upward extension of the upper member **32** the length of the jack can be further increased by upward pull on the second seal member **38.** As the intermediate member **26** is moved upwardly granular material **28** falls into the lower portion of the lower member **10** and underneath the lower end **18** of the intermediate member. Granular material **28** supports the intermediate member in its extended position.

Thus the total length of the jack represents the total telescopic extension of both the intermediate and the upper member. When the jack has reached its desired height it may be easily utilized to support any weighted object, such as a house trailer, camper or the like.

If additional extension of the length is required such may be obtained by rotating the bushing **42** which threadably extends screw **46.** Thus a final adjustment of the maximum height may be desired.

After the jack is utilized in its extended position it may be easily returned to its fully withdrawn or contracted condition by merely turning it upside down as previously described.

While the invention has been described with a certain degree of particularity it is manifest that many changes may be made in the details of construction and the arrangement of components without departing from the spirit and scope of this disclosure. It is understood that the invention is not limited to the embodiments set forth herein for purposes of exemplifying the invention, but is to be limited only by the scope of the attached claim or claims, including the full range of equivalency to which each element thereof is entitled.

What is claimed is:

1. A jack comprising:

a lower upright tubular member closed at the lower end;

an intermediate upright tubular member of external diameter less than the internal diameter of said lower member, the intermediate tubular member being telescopically received in said lower member, the intermediate member being closed at the bottom;

granular material within the annular area between the lower and intermediate members, the granular material falling to the lower end of the lower member as said intermediate member is withdrawn to thereby support the intermediate member in such withdrawn position;

an upper upright tubular member of external diameter less than the internal diameter of said intermediate member, the upper member being telescopically received in said intermediate member and being opened at the bottom and closed at the upper end thereof; and

granular material within said upper member and the lower portion of said intermediate member, the granular material falling to the lower portion of said intermediate member as said upper member is withdrawn to thereby support the upper member in such withdrawn position.

2. A jack according to claim **1** including:

a bushing closing the upper end of said upper member, the bushing having a threaded opening therein; and

an externally threaded screw received in said threaded opening of said bushing, whereby the length of the jack may be adjusted by the rotation of said screw and said bushing relative to each other.

3. A jack according to claim **1** wherein said upright tubular member includes an enlarged internal diameter portion intermediate the upper and lower end thereof, the enlarged diameter portion serving as a reservoir of said granular material.

4. A jack according to claim **1** including:

a first seal member closing the upper end of said lower tubular member, the first seal member having an opening therein slidably receiving said intermediate tubular member; and

a second seal member closing the upper end of said intermediate tubular member, the second seal member having an opening therein slidably receiving said upper tubular member.

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