Oct. 18, 1966 W. C. OLSEN 3,279,752

HOISTING TRUCK WITH SCREW ACTUATED SCISSORS TYPE RAISING MEANS AND HAMMOCK SUPPORT MEANS

Filed Nov. 25, 1964 4 Sheets-Sheet 1

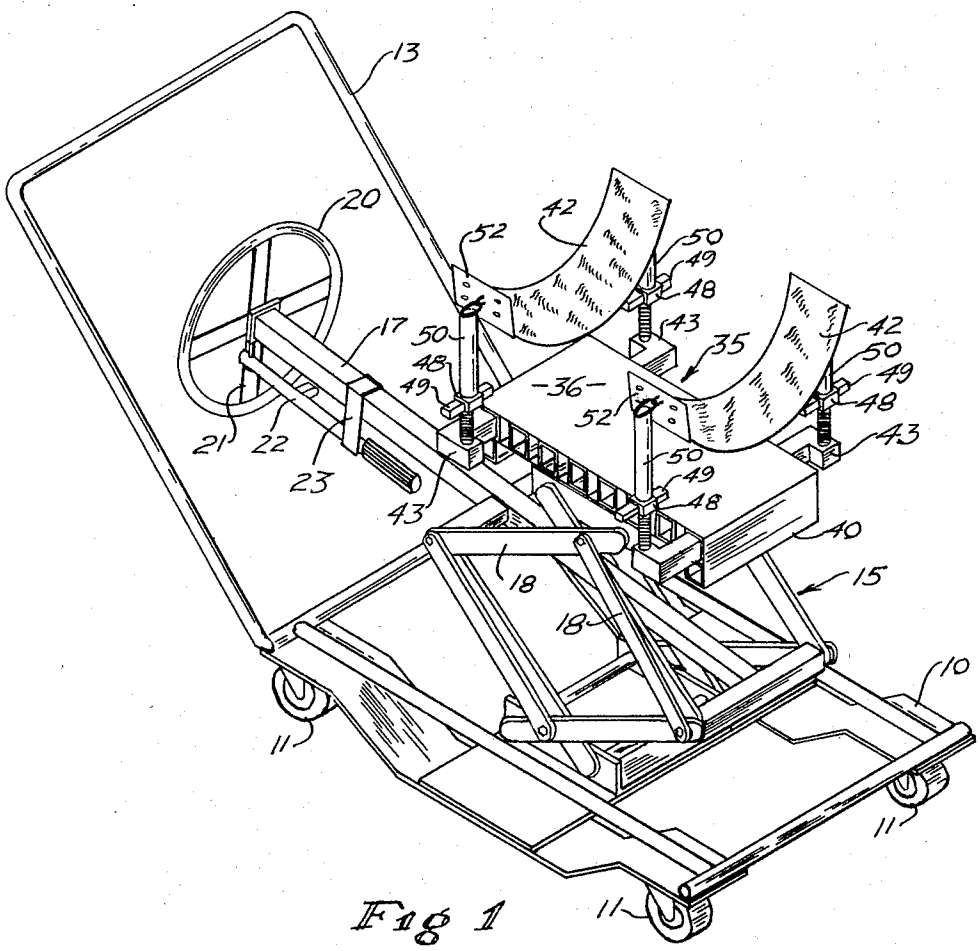


Fig 1

INVENTOR: WILLIE C OLSEN

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ATT'Y

Oct. 18, 1966 W. C. OLSEN 3,279,752

HOISTING TRUCK WITH SCREW ACTUATED SCISSORS TYPE RAISING MEANS AND HAMMOCK SUPPORT MEANS

Filed Nov. 25, 1964 4 Sheets-Sheet 2

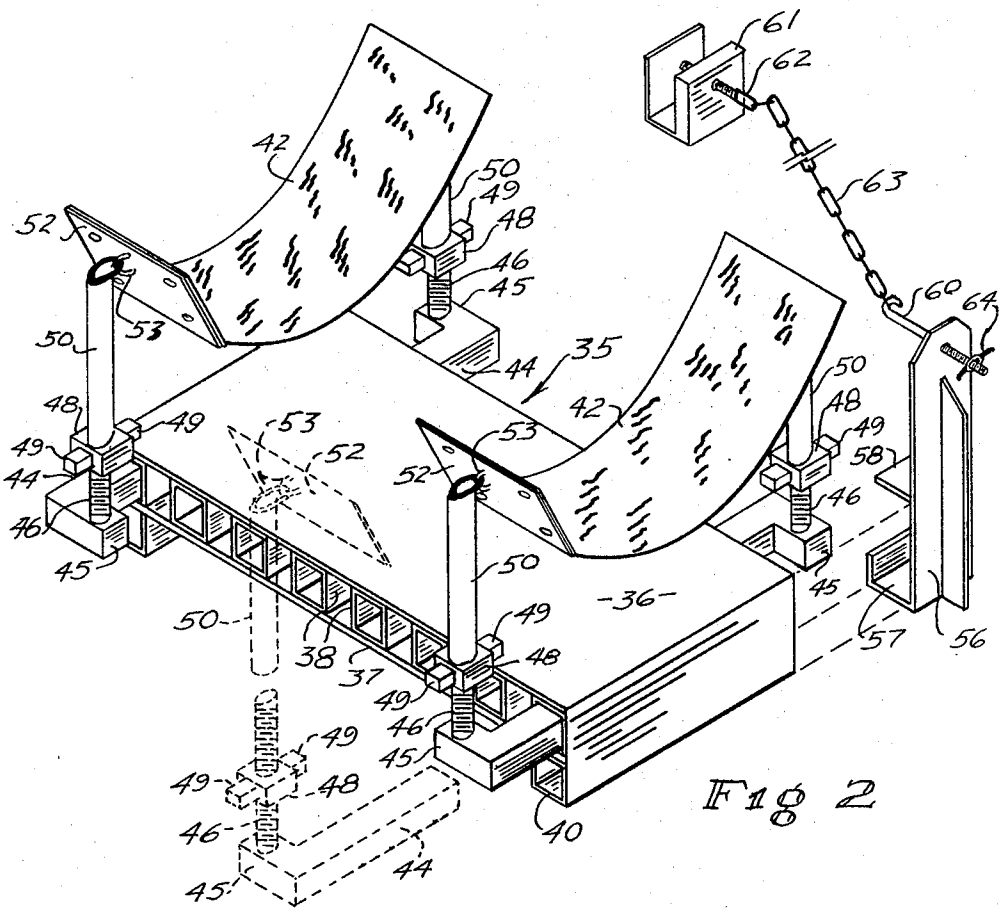


Fig 2

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Oct. 18, 1966 W. C. OLSEN 3,279,752
HOISTING TRUCK WITH SCREW ACTUATED SCISSORS TYPE RAISING MEANS AND HAMMOCK SUPPORT MEANS
Filed Nov. 25, 1964 4 Sheets-Sheet 3

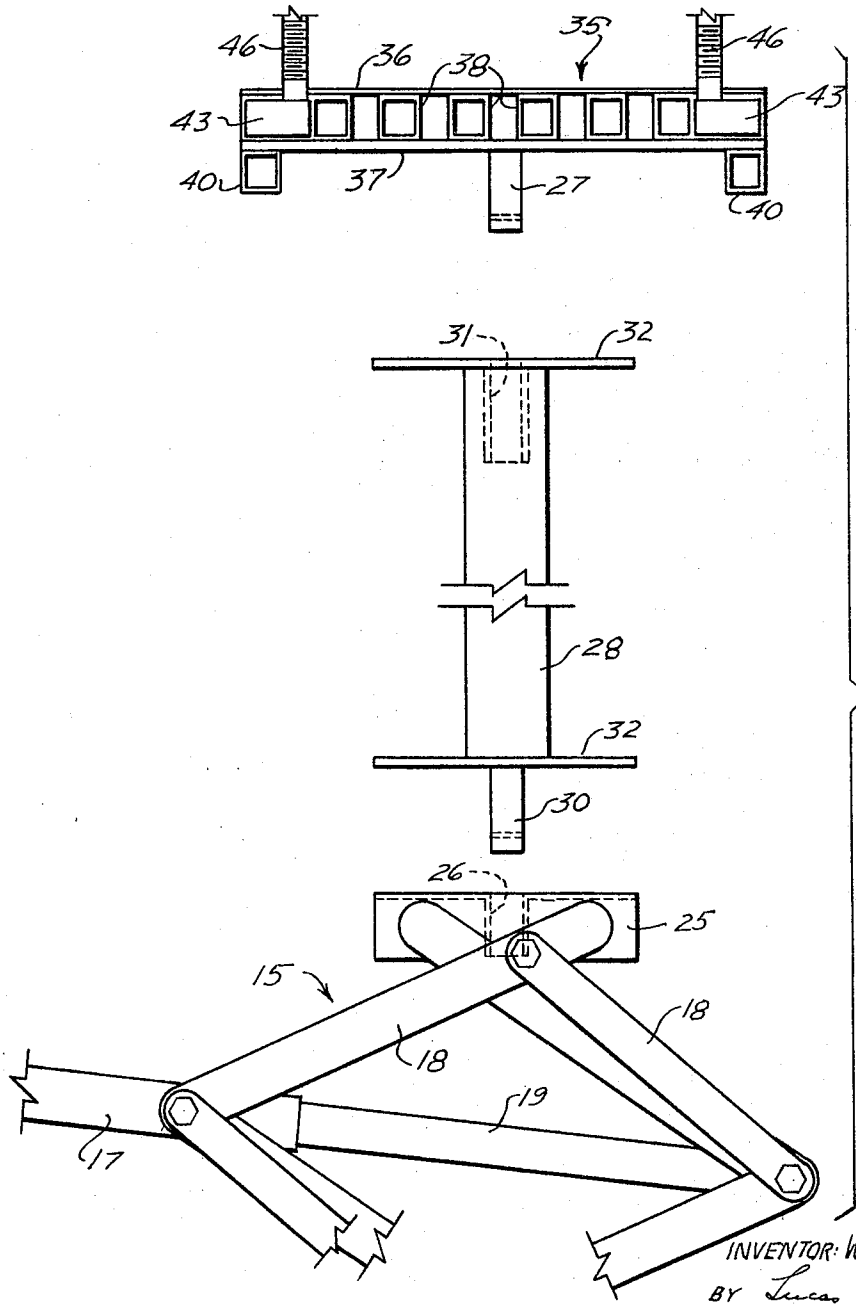


Fig 3

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Oct. 18, 1966 W. C. OLSEN 3,279,752

HOISTING TRUCK WITH SCREW ACTUATED SCISSORS TYPE RAISING MEANS AND HAMMOCK SUPPORT MEANS

Filed Nov. 25, 1964 4 Sheets-Sheet 4

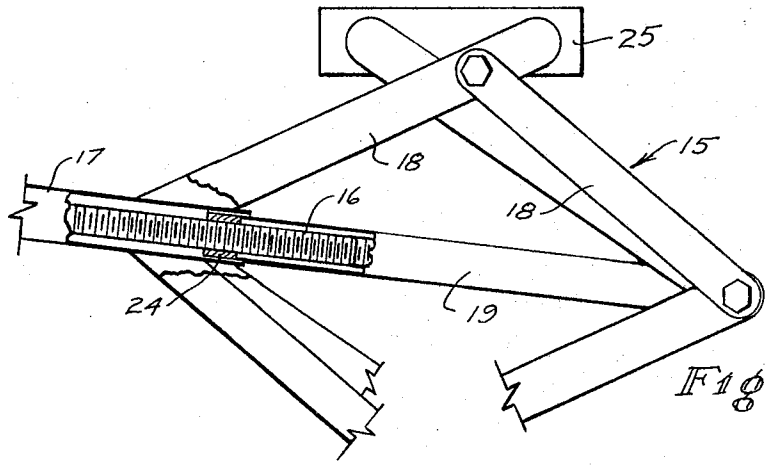


Fig 4

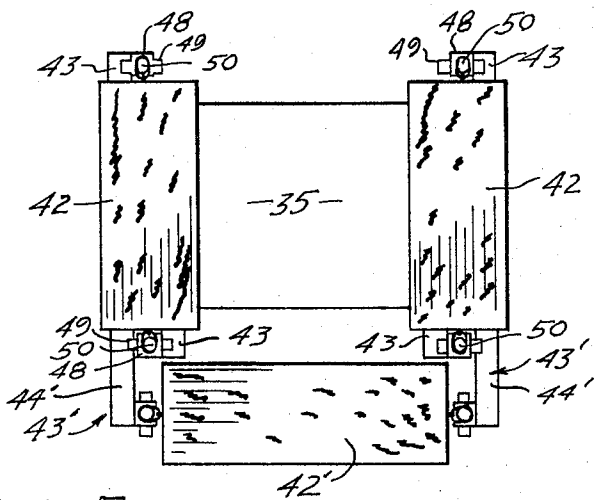


Fig 5

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HIS ATT'Y

United States Patent Office

3,279,752

Patented Oct. 18, 1966

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3,279,752

HOISTING TRUCK WITH SCREW ACTUATED SCISSORS-TYPE RAISING MEANS AND HAMMOCK SUPPORT MEANS

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Filed Nov. 25, 1964, Ser. No. 413,908

6 Claims. (Cl. 254—7)

This invention pertains to portable devices for lifting and carrying heavy parts of machines and more particularly to a device for lifting automobile or tractor parts from a position beneath such parts and moving them about.

Automobile parts such as transmission, differentials, engines and the like are often far too heavy to be lifted without mechanical assistance. Also, it is frequently impossible to lift these parts from above by a hoist or the like. Therefore, it has become fairly common to use a lifting jack to raise or lower such parts and to carry them from beneath the car to a work area or vice versa.

Generally such jacks had either a fixed steel tray or some specially formed jig to hold the part. The steel trays were not adequate to carry the part in proper position, and the tilting or rolling of the part in the tray made such devices most clumsy to handle. The devices having jigs were excellent for such parts as they were designed to hold, but were practically restricted to only such parts.

By my invention I provide a jack which has nearly universal application to all such parts with no great change required to be adaptable to carry a multiplicity of devices; to raise and lower them and to be completely portable.

A more complete understanding of my invention in its embodiment will be apparent from a study of the following specification and the figures in which:

FIG. 1 is a perspective view of my jack mounted on its dolly,

FIG. 2 is a perspective view of the carrier head of my device removed from the jack,

FIG. 3 is an exploded view of the jack, and its appurtenant parts showing a pillar extension,

FIG. 4 is a side elevational view of the jack alone, part of it being broken away to show the underlying parts, and

FIG. 5 is a top plan view to a reduced scale showing an alternate arrangement of the carrier.

Briefly my invention comprises a lifting and carrying head for a jack and dolly combination, which head is designed to embrace heavy parts of motor vehicles or the like to lift and carry such parts conveniently.

More particularly and referring to the figures, my invention includes a dolly having a frame **10** mounted on four casters **11** and moved and guided through a handle **13**. This structure is not uncommon in the art.

Mounted on the frame **10** is a scissors jack **15** which is somewhat different from other jacks in that the screw **16** (FIG. 4) is completely enclosed in a square tubular housing **17**. Between the arms **18** of the jack I provide a smaller tubular housing **19** which telescopes into the housing **17** to provide a completely dust and grime free screw housing. The screw **16** is turned by a wheel **20**. Movement of the wheel in a direction to lower the jack is prevented by engagement between one of the spokes **21** and a bar **22** releasably carried in a clip **23** fixed to the housing **17**. The bar **22** is also designed to be used as a lever to provide added torque for raising the jack if necessary.

2

In order to provide for the scissors action of the jack it is necessary that the arms **18** from opposite sides be pulled together to raise the jack or separated to lower it. In my device this is accomplished by forcing motion of the square tubes. The larger tube **17** is fixed to the pivot between the set of arms **18** on one side and the smaller tube is similarly fixed to the pivot between the arms **18** on the other side. A block **24** having internal threads is welded to the smaller tube. The screw **16** is threaded into this block. It will now be apparent that turning the screw in one direction will pull the smaller tube into the larger one. This is true since the wheel **20**, or a suitable thrust bearing, prevents inward motion of the screw relative to the larger tube. By the same means, a reversal of direction of the screw **20** would cause counter movement between the two tubes. Thus, by movement of the tubes I accomplish the same action as others have previously done with an exposed screw extending beyond the jack arms **18**.

The top plate **25** of the jack, as best shown in FIG. 3 is formed to provide a socket **26** into which a stud **27** on the base of my carrier may be inserted. Alternatively, if the device to be lifted will be located at some distance above the ground, a pillar extension **28** (FIG. 3) may be inserted between the plate **25** and the carrier. This extension will also have a stud **30** on its lower end to fit into the socket **26** and a socket **31** formed in its upper end to receive the stud **27**. Wide plates **32** at both ends serve to steady the entire device to avoid tipping.

It will be apparent that regardless of the use or non-use of the extension, the stud **27** will be rotatable in the socket **26** so that the carrier can be rotated to any position relative to the jack.

The carrier comprises a built up base **35** together with supported hangers adapted to hold the object being lifted. The base **35** is formed of an upper plate **36** and a lower plate **37** separated by a series of spaced square tubes **38**. The tubes may be welded to the plates to form a solid sandwich-like structure. Preferably the tubes are spaced apart a distance somewhat less than or about equal to the distance across the tube. This structure provides a very stiff and strong base of comparatively light weight. It also provides convenient means for supporting the hangers as will later appear. My preferred embodiment also has a square tube **40** welded to the bottom plate **37** at each end thereof. These tubes provide additional stiffness and also have other advantages which will be made apparent hereinafter.

The hangers for the piece to be lifted are composed of hammocks or loops **42** of belting or the like supported from the base **35** by unique supporting means. This supporting means includes a pair of support brackets **43** for each hammock. These brackets are formed of a square tang **44** carrying an offset head **45** (FIG. 2). The tang is of such size that it will smoothly slide into the center opening of the square tubes **38** and still prevent substantial rotating of the tang within the tube. It should be noted that these tangs can be inserted into any of the tubes, thus allowing for adjustments to better cradle the piece to be carried and also that the depth to which the tang is inserted may be varied thus allowing a lateral adjustment also.

Upright studs **46** are mounted on the heads **45**. These studs are offset from the tangs **44** just half the distance between adjacent square tubes **38** of the base **35**. It will be evident from FIG. 2 that for each pair carrying a single hammock, the offset is in the same direction so

that upon insertion of the respective tangs into the tubes from opposite side, the studs will be exactly opposite each other across the base. However, for the two different hammocks, the offsets may be opposite if desired.

Threaded onto the studs **46** is a base block **48** which may be provided with ears or handles **49** so that they can be adjustably screwed up or down on the studs **46**. The blocks **48** are large enough to form a solid base for hollow columns or posts **50** which fit over the upwardly-extending portion of the studs **46**.

The columns **50** provide the support for the hammocks **42**. The hammocks are formed of heavy fabric webbing or leather belting or similar flexible material. End plates **52** may be rivetted to the flexible material to provide an anchor by which the end can be supported. A loop **53** on the end plate **52** is linked to a loose link **54** which will surround the post **50**. This link is adapted by its size to fit the post somewhat closely so that a weight resting on the hammock **42** will cause the link to bind against the post and not slip downward. Thus it will be readily possible for the hammocks to be removed, and still the hammocks, once placed are fully supported.

The operation of my device will now be seen to be comparatively simple. The device can be positioned under the part to be carried, by rolling the assembly on its casters **11** under the automobile or the like. The carrier assembly can then be raised under the part to be moved by use of the jack **15** which has been set up to use the extension **28** if necessary. As the device is raised, the upper assembly can be positioned by rotating the top plate **25** and its associated parts. The width between the posts **50** can also be adjusted by sliding the tangs **44** into or out of the tubes **38** in the bottom plate. A further adjustment is possible in that the height of the posts **50** above the plate **25** can be adjusted by moving the base blocks **48** up or down on the studs **46**.

When the entire device is adjusted, the hammocks are brought up under the piece to be moved which can then be detached from its surrounding parts. The jack is then lowered and the piece may be wheeled away to be worked on. Replacement of the piece will require only that the jack be wheeled into place and the piece be raised into place and fastened there.

Several refinements of my device are contemplated. For example: in the event that the piece may have to be moved some distance or will be resting on my jack for any considerable length of time, it may be desirable to provide some means to hold it in place on the hammocks. I can provide such means quite easily as best illustrated in FIG. 2. An upright bracket composed of a column **56** having a hooked member **57** at its base and a vane **58** extending outward at a point above the base is adapted to slide over the end of the base **38**. The hooked member engages the tube **40** and together with the vane, prevents movement of the bracket in any direction except longitudinally of the tube **40**. At its upper end, the bracket is formed with a hole through which a threaded hook **60** projects. A clamp **61** having a threaded clamp member **60** is connected to the hook **60** by a chain **63** which can be releasably hooked onto the hook **60**.

In use, the clamp is affixed to some portion of the piece being carried by the jack. Preferably this part is somewhere remote from the column **56**. The chain is then carried over the part in the hammock and is attached to the hook **60**. The nut **64** on the hook may then be tightened to fix the hook in the chain and prevent it from coming loose. Thus the chain will hold the piece more firmly in place on the hammocks. It should be noted here, however, that because of the flexibility in the hammocks, the piece lying on them will already be well cradled and is not apt to roll anywhere.

A further refinement of my device is shown in FIG. 5 where I provide a device particularly adapted to support a work piece having intersecting shafts or the like. A good illustration of such a piece might be a differential from a car or truck, but other similar devices could also be handled.

In this device, I provide the same structure as has been previously described. This includes the brackets **43** carrying the posts **50** which in turn support the hammocks **42**. In addition I provide a third set of brackets **43'** which may have somewhat longer tang **44'** and a similar head to the original bracket. It will be apparent that it may also be possible to use my original brackets without alteration. The tangs **44'** are inserted into the lower tubes **40**, both on the same side of the base **35**, and a hammock **42'** is draped between them. The details of construction of the hammock and its supports are the same as for the similar parts of the mechanism previously described so it is not described in detail here. It will be apparent that the device now has one hammock substantially at right angles to the other two, and that this one hammock will support a shaft which lies in a position to intersect the other shaft.

Having thus described my invention in its embodiment, I am aware that further and extensive variations may be made therefrom without departing from the spirit and scope of my invention as limited only by the following claims.

I claim:

1. Carrier means adapted to be mounted on a lifting means comprising a base, said base being composed of two plates fixed to a plurality of laterally extending, noncircular tubes lying between said plates, a plurality of brackets, said brackets having tangs of shape complementary to the interior of said tubes, said tangs being disposed within said tubes whereby said brackets are adjustably mounted in pairs in said base and are prevented from rotating in said tubes, offset heads on said brackets, uprights mounted on said offset heads whereby said brackets may be mounted in adjacent tubes and said uprights on any given pair will be opposite each other, and flexible hammock means extending between each pair whereby an irregular shaped work piece can be readily cradled in said hammock.

2. For use on a jack having a head formed to provide a socket therein, carrier means comprising a base having an upper plate and a lower plate, noncircular tubes fixed between said plates to hold them in spaced relation to each other, stud means on said lower plate adapted to be engaged in said socket whereby said carrier is rotatably mounted on said jack, a plurality of bracket means having tangs of complementary shape to the inner surfaces of said tubes, said tangs being slidably engaged in said tubes, offset heads on said bracket means being disposed on said base in pairs, upright means on said head means so placed that when said bracket means are mounted in adjacent tubes in said base said upright means on any one head will be directly opposite the upright on its paired bracket, and flexible hammock means engaged between said upright means on each pair of said brackets to support and hold a workpiece.

3. The device of claim **1** in which additional noncircular, laterally extending tubes are affixed to the ends of said base, additional brackets engaged in the said additional tubes, uprights on said additional brackets and a flexible hammock means mounted on said last named upright means whereby said last named hammock is at substantially a right angle to said first named hammocks.

4. The device of claim **1** in which at least one additional tube is affixed to the base at one end thereof, upright bracket means adapted to engage said base and said tube being thereby held on said base, and chain means having a clamp at one end thereof, said chain means being releasably attached to said upright bracket means whereby a work piece may be held in said clamp and thereby be chained to said base.

5. The device of claim 1 in which said upright means are vertically adjustable to provide for adjustment of the vertical position of said hammock means.

6. A jack comprising a base and a top plate, arms pivotally connected between said base and top plate in the form of a scissors jack, said arms having opposing pairs, pivot mean between each of said opposing pairs, larger tubular means fixed to one of said pivot means, smaller tubular means slidably telescoped within said larger tubular means and also fixed to an opposing pivot means, block means having an internal thread, said block means being fixed to said smaller tubular means, screw means within said larger tubular means and threadably engaged with said block means and turning means fixed to said screw means and abutting said larger tubular means whereby turning of said screw means will pull said smaller tubular means into said larger tubular means.

References Cited by the Examiner

UNITED STATES PATENTS

1,714,464	5/1929	Merriman	254—126
2,012,430	8/1935	Kuhlman	254—2 X
2,189,010	2/1940	Lewis	254—2
2,621,891	12/1952	Marsh	254—10
2,727,637	12/1955	Weaver	214—1
2,739,783	3/1956	Pentecost	254—124
2,811,386	10/1957	Shaw.	
3,065,648	11/1962	Gibney	74—424.8 X
3,206,994	9/1965	Angsten	74—424.8

FOREIGN PATENTS

1,109,336	9/1955	France.

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