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2,727,637

UNIVERSAL ADJUSTABLE TRANSPORT DOLLY

Filed Nov. 24, 1952

3 Sheets-Sheet 2

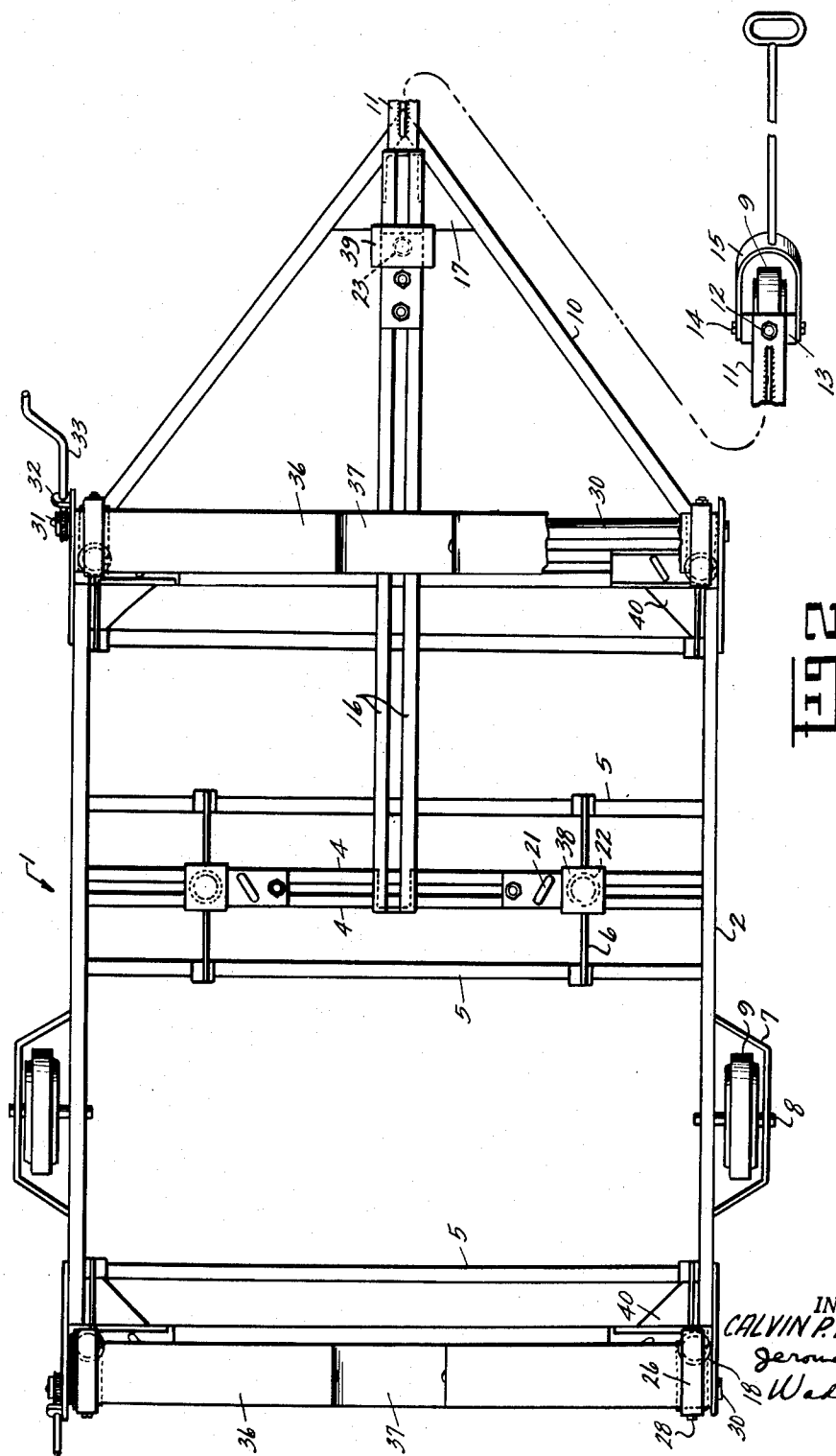


Fig. 2

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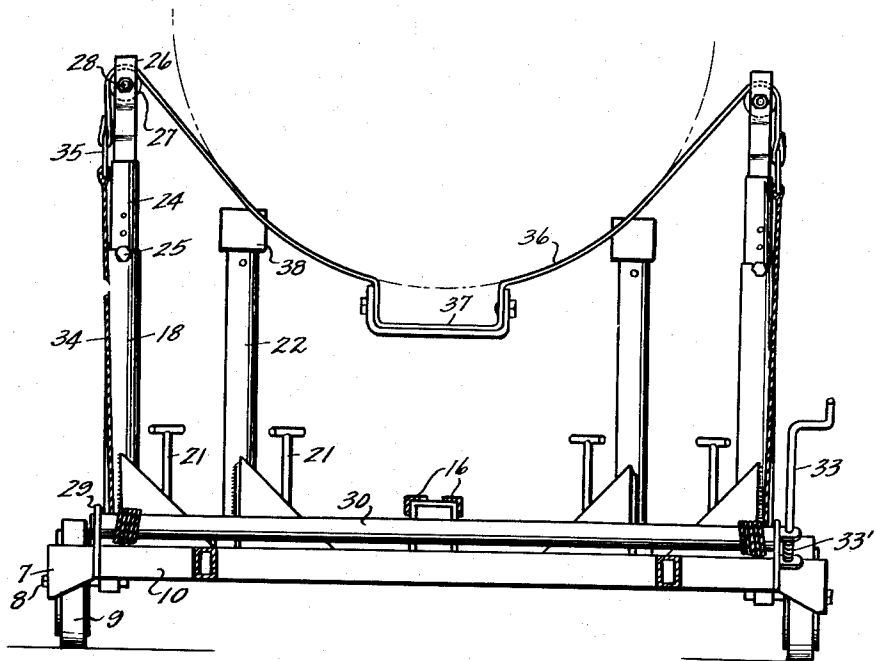


Fig 3

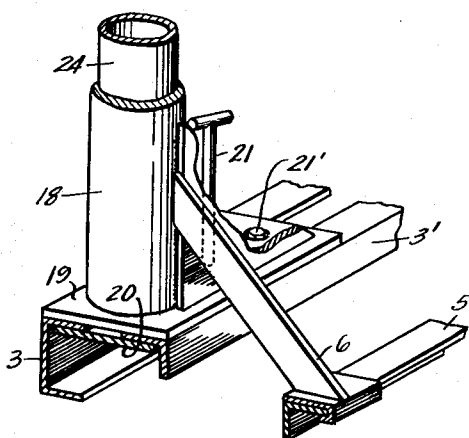


Fig 4

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5 Claims. (Cl. 214—1)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without payment to me of any royalty thereon.

This invention relates to a new and novel transport dolly which is universally adjustable and particularly adaptable for transport and support of aircraft engines and fuselage sections. Prior devices directed to similar purposes have generally had the drawback of being limited as to utility and applicability whereas the novel transport dolly which is the subject of my invention is simple in structure and easily adapted for carriage of objects of highly varied shapes and sizes. The use of my novel device results in a saving of time, space and money to those concerned in the transport of irregular and varied size and shaped objects.

An object of my invention is to provide a highly improved universally adaptable transport dolly.

Another object of my invention is to provide a mobile support unit with a number of adjustable support elements to readily adapt the unit for the support and transport of objects of varied size and shape.

A further object of my invention is to provide an improved mobile support unit highly simplified in structure and economical with respect to both maintenance and production.

Other objects and advantages of my invention will be readily apparent from the following description thereof in conjunction with the accompanying drawings wherein:

Fig. 1 is a side elevation of my novel mobile support unit.

Fig. 2 is a plan view of my novel support unit.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a partial sectional perspective view of the adjusting arrangement provided for transverse movement of the support elements relative to the base of my mobile support unit.

Fig. 5 is a partial detail showing of the control device for raising and lowering the belt supports in my improved mobile transport unit.

As shown in the drawings my invention comprises a rectangular base frame 1 including two longitudinally arranged side elements 2 of welded box frame construction and U-shaped end elements 3 connecting the respective ends of the elements 2 and having the open end of the U facing inwardly. While it is preferred that the elements be fabricated from angle iron employing a welded construction, any material of suitable strength may be used. Additionally, members 3' which are preferably lengths of angle iron are arranged at either end of the frame 1 parallel to and spaced from the elements 3 respectively with the open sides of the members opposed. Intermediate the base frame 1 and connecting the members 2 are similarly opposed U-shaped members 4 in spaced relation. Transverse angle members 5 arranged parallel to the elements 3 and 4 as shown in Fig. 2 serve to reinforce the frame and provide support for vertical bracing elements 6. Guard frames 7 rearwardly of the frame extend outwardly of the side elements 2. Pivot

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pins 8 are mounted in and connect the side elements 2 and the guards 7, and respectively provide mountings for rear supporting wheels 9. Extending forwardly from the frame 1, secured thereto and arranged in the same plane, is an inverted V-shaped base member 10. Mounting plate 11 extends forwardly and upwardly from the apex of the V and is secured thereto. The plate 11 is apertured at its forward end to receive a pin 12 extending upwardly from an inverted U-shaped wheel mounting member 13 which is pivotally secured to the plate in any suitable manner such as by threading the head of the pivot pin 12 and employing a washer and nut. Pivotally supported on the member 13 by a pin 14 is a third supporting wheel 9. A further inverted U-shaped member 15 having a draw bar with a handle extending therefrom is also pivotally mounted on the pin 14 and outwardly of the member 13 as shown in Fig. 2 of the drawings. Vertically spaced from and supported on the transverse bars 4 centrally thereof are spaced angle elements 16 which extend forwardly to and vertically spaced from a plate 17 secured to the apex of member 10 and on which elements 16 are supported. Mounted on the four corners of the frame 1 and adjustably secured to the members 3 and 3' are hollow cylindrical members 18. The members 18 extend vertically from the base and are adjustably secured thereto by means of a plate 19 fastened near the lower end thereof as by welding and a second plate 20 spaced therefrom and adjustably connected to plate 19 by a threaded handle member 21 and a bolt 21'. The upper plate is supported as shown in Fig. 4 on the upper surfaces of opposed members 3 and 3', the lower plate being clamped to the under surfaces thereof; the connecting elements 21 and 21' for the plates extending through the space between the respective opposed members 3 and 3'. Accordingly, by loosening the connecting elements, the members 18 may be transversely moved with respect to the base in a manner which is obvious. Support members 22 of a nature similar to members 18 are fastened to spaced members 4 in a similar manner. Likewise a collar element 23 is mounted forwardly on the spaced elements 16. Adjustably mounted in each cylinder 18 for vertical movement with respect thereto are support members 24, the lower portions thereof having spaced apertures vertically thereof to receive a pin element 25 therethrough. The upper extremity of each cylindrical member 18 has diametrically opposed notches therein to receive the pin member therein to hold the support members 24 in adjusted position. To the head of each member 24 is fastened a metal strap 26 as shown in Fig. 1 by welding or any other suitable means. The sides of the strap 26 are spaced, as shown, to rotatably support a roller 27 therebetween mounted on a pin 28 connected to the sides. Vertical plates 29 are fastened to the sides of elements 2 immediately forwardly and rearwardly of the spaced transversely aligned pairs of support cylinders 18. Mounted in the transversely arranged plates 29 are rollers 30 arranged for rotation therein and having the ends thereof extending therethrough. On one end of each roller 30 is fixed a worm gear 31. A mounting bracket 32 is secured to plates 29 adjacent the worm gears 31. Mounted in brackets 32 are operating handles 33 having a worm gear 33' at one end thereof in geared relationship with the gears 31 respectively. As shown in Fig. 3 of the drawings, cables 34 having one end wrapped around and secured to rollers 30 extend upwardly and are secured to triangular loops 35 secured to the ends of belts 36 which extend transversely of the unit and are supported on rollers 27 and accordingly by the transversely aligned support units therefor. The belt may be made of neoprene or any suitable material of similar characteristics. A reinforcing member 37 is preferably bolted to

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the central section of each belt as indicated in Fig. 3 but may be eliminated if desired. Accordingly, as the operating handles 33 are rotated, the belt sections intermediate the transversely aligned rollers 27 may be selectively shortened or lengthened as desired.

Mounted in the cylindrical support members 22 are intermediate support pads 38 having cylindrical stems arranged for vertical adjustment with respect to members 22 in a manner similar to that employed to hold members 24 in adjusted position. A forward support pad 39 having a stem with spaced apertures therein is mounted in collar 23 for vertical adjustment with respect thereto in a manner as described with respect to support members 24. The vertical bracing elements 6 for the support elements, secured thereto in any suitable manner, are arranged to be adjustable therewith in a manner as shown in Fig. 1 of the drawings by providing a tongue and groove engagement with their base support members. Triangular reinforcing elements 40 are preferably employed in the corners of the base frame.

Accordingly, my improved mobile support unit provides fore and aft individually vertically adjustable belt support means, and intermediate thereof two transversely aligned and transversely adjustable support pads which are also individually vertically adjustable. In addition, a support pad is provided which is adjustable longitudinally of the base, centrally and forwardly thereof. It can be readily recognized that universal adaptability is provided by such support unit. The invention is particularly adaptable for use with aircraft engines of the jet type wherein the resilient belt sections are adjusted to take the main load and the intermediate transversely and vertically adjustable support pads and the longitudinally and vertically adjustable support pad may be adjusted to provide proper balance.

While a preferred practical embodiment and application of the invention has been set forth herein, many variations and modifications thereof as well as varied applications will be readily apparent to those skilled in the art and the invention is intended to be limited only by the scope of the appended claims.

I claim:

1. In a mobile transport dolly, a mobile base frame, two pair of transversely aligned support units mounted on said base frame in longitudinally spaced relation and being both vertically and transversely adjustable with respect thereto, sling type support elements adjustably carried by said respective pairs of support units, additional vertically and transversely adjustable support units mounted on said mobile base frame intermediate said pairs of transversely aligned support units, and a further vertically adjustable support unit mounted on said base frame and adjustable longitudinally thereof whereby the dolly is readily adaptable for support and transport of varied size and shaped objects.

2. In a mobile transport dolly, a mobile base frame, two pair of transversely and longitudinally aligned support units mounted on said mobile base frame and being both vertically and transversely adjustable with respect, thereto, roller members on each of said support units, control means associated with each pair of transversely aligned support units, belt means extending over the rollers on

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each pair of support units and connected to said control means whereby the belt means may be individually raised or lowered, and additional vertically and transversely adjustable support pads mounted on said mobile base frame intermediate said pairs of aligned support units whereby there is provided a support assembly for objects of varied size and shape.

3. In a mobile transport dolly, a mobile base frame including pairs of spaced members at each end thereof, a pair of hollow cylinders mounted on each of the respective pairs of spaced members so as to be transversely adjustable with respect thereto, a support member mounted in each of said hollow cylinders and vertically adjustable with respect thereto, a roller member mounted on each of said support members, belt means supported on the roller members mounted on the respective pairs of hollow cylinders, separate control means for each belt means connected therewith for additional vertical adjustment thereof with respect to the mobile base frame, and additional vertically adjustable support pads mounted on said mobile base frame whereby a universally adaptable mobile transport dolly obtains.

4. In a mobile transport dolly, a mobile base frame including spaced U-shaped members arranged transversely thereof, a pair of vertically and transversely adjustable support units mounted on each of said spaced U-shaped members, an additional pair of support members mounted on said mobile base frame longitudinally thereof and vertically spaced therefrom, a support pad mounted on said additional pair of support members for adjustment longitudinally thereof and vertically with respect thereto, and separately adjustable belt support means mounted on each pair of support units whereby there is provided a balanced mobile transport dolly for objects of varied size and shape.

5. In a mobile transport dolly, a mobile base frame including transverse base support means spaced longitudinally thereof, vertical support elements arranged in spaced relation on each of said support means and being vertically and transversely adjustable with respect thereto, sling type support elements mounted on the upper extremities of the vertical support elements on selected base support means and adjustable with respect thereto, an additional longitudinally arranged base support means, and a support pad mounted thereon for adjustment horizontally and vertically with respect thereto providing a balanced mobile transport dolly.

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