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APPARATUS FOR HOISTING AND TRANSPORTING A TABLE

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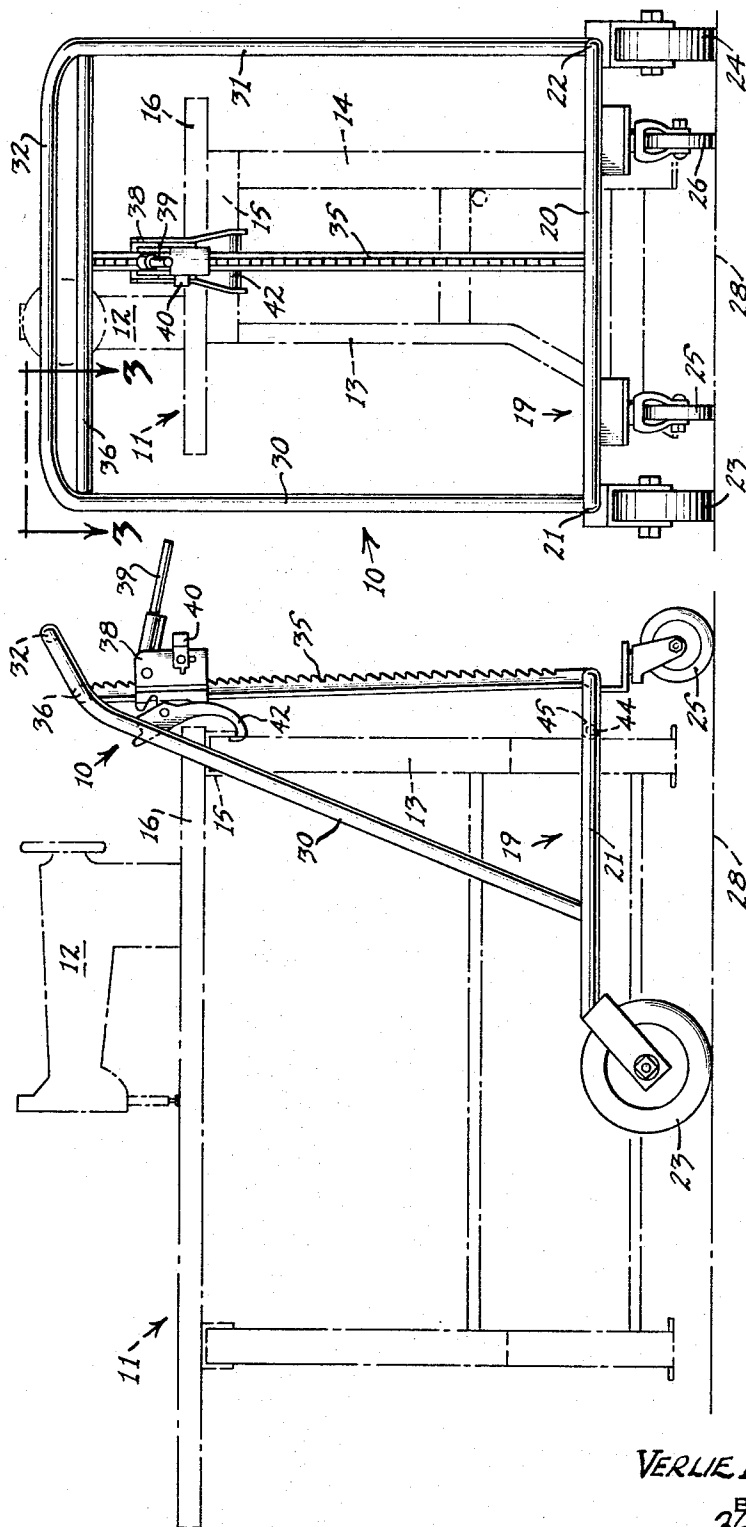


Fig. 2

Fig. 3

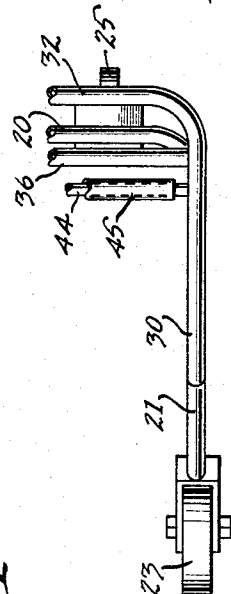


Fig. 1

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APPARATUS FOR HOISTING AND TRANSPORTING A TABLE

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4 Claims. (Cl. 254-6)

This invention relates to an apparatus for hoisting and transporting a table, and more particularly to an apparatus for hoisting and transporting a sewing machine table in a constantly level position.

In the textile or garment manufacturing industry where table-model sewing machines are operated, it is sometimes necessary to move these tables to a different location. Because of the peculiar mechanisms of these table-model sewing machines, hydraulic fluid will be spilled and lost unless the machine and table are maintained level at all times. Although such movement could be carried out manually, two or more men must be used not only to move the table, but also to carefully maintain the level of the table and the hydraulic fluid. Such manual handling of the machines is therefore not only uneconomical in time, labor and money, but also tedious and subject to human error.

It is therefore an object of this invention to overcome the above disadvantages by providing a somewhat simple, portable apparatus which can easily handle the elevation and transportation of a sewing machine table easily and rapidly, and simultaneously maintain the level of the table and the hydraulic fluid.

Another object of this invention is to provide a hoisting and transporting apparatus which is adapted to engage and lift one end of the table, such as a sewing machine table, and maintain the elevated table in a level position while the apparatus is moved to the desired new table location.

A further object of this invention is to provide an apparatus for hoisting and transporting a table including a frame mounted on wheels for receiving one end of the table and a jack and guiding mechanism mounted on the frame for elevating and lowering the table and maintaining the table constantly level in all positions.

Further objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawings, wherein:

FIG. 1 is a side elevation of the invention operatively supporting a sewing machine table in an elevated level position, shown in phantom;

FIG. 2 is a rear end elevation of the invention disclosed in FIG. 1; and

FIG. 3 is a fragmentary top plan view taken substantially along the line 3-3 of FIG. 2.

Referring now to the drawings in more detail, the apparatus 10 is designed to elevate, lower and transport a table, such as the table 11 supporting a sewing machine 12. The sewing machine table 11 is provided with legs, such as the right end legs 13 and 14 connected at their upper ends by a channel-shaped transverse beam 15, which also supports the table top 16.

The apparatus 10 includes a U-shaped frame member 19 including a transverse portion 20 and a pair of longitudinal portions 21 and 22 extending forwardly from opposite ends of the transverse portion 20, and on opposite sides of the table 11 when the apparatus 10 is in operative position for receiving the table. A pair of wheels 23 and 24 are affixed to and depend from the forward extremities of the longitudinal portions 21 and 22. A pair of rear wheels or casters 25 and 26 are swivelly mounted to, and depend from, the transverse member 20, so that all the wheels 23, 24, 25 and 26 are adapted to engage a sup-

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porting surface, such as a floor 28, for supporting the frame member 19 in a substantially horizontal position.

Extending upwardly and rearwardly from the longitudinal frame portions 21 and 22 are a pair of brace arms 30 and 31, disposed on opposite sides of the table 11 in operative position, and connected at their upper ends by a transverse handle bar 32.

Extending in an upright position and fixed to the transverse frame portion 20 is a rack bar 35. The upper end of the rack bar 35 is fixed to an upper transverse bar 36, which in turn is secured to the upper extremities of the opposite side braces 30 and 31.

Slidably mounted upon the rack bar 35 is a conventional jack head 38 including a ratchet and pawl mechanism for engaging the rack bar 35, and a lever 39 for actuating the jack head 38 in order to move the jack head 38 step-by-step along the rack bar 35 either upwardly or downwardly, depending upon the position of the conventional reversing mechanism 40. A conventional automobile bumper jack may be adapted for use as the rack bar 35, jack head 38 and lever 39 incorporated in the apparatus 10. Pivotally mounted upon the front face of the jack head 38 is a hook 42 which is adapted to fit beneath and engage the transverse beam 15.

Spaced below the hook 42 is a transverse bar or axle 44 rigidly fixed between the longitudinal frame member portions 21 and 22. The axle 44 supports a sleeve or roller 45 for free rotatable movement. The longitudinal spacing of the hook 42 and the roller 45 is such that when the hook 42 engages beneath the flange of the channel member 15, the lower portions of the table legs 13 and 14 will abut against the roller 45, in vertical position, so that the table top 15 will be maintained level while the table 11 is being elevated, lowered or transported by the apparatus 10.

It will be noted in FIGS. 1 and 3 that the rack bar 35, and consequently the plane of the transverse bar 36 and transverse frame member portion 20, are not truly vertical. Instead, the rack bar 35 extends upwardly and slightly forwardly to accommodate the longitudinal spacing of the hook 42 and the roller 45 so that the legs 13 and 14 will be disposed in a vertical plane in operative position.

The transverse rod 44 is provided with the roller 45 so that the lower portions of the legs 13 and 14 will be in rolling engagement with the transverse rod 44 as the jack head 38, and the table 11, are moved vertically along the rack bar 35. Of course, the rack bar 35 could be mounted truly vertical by mounting the roller axle 44 closer to the rear of the apparatus 10.

The roller bar 44 must be spaced a sufficient distance above the floor 28 to permit continuous engagement of the legs 13 and 14 with the roller 44 for any desired elevation of the table 11 by the apparatus 10.

Moreover, the length of the longitudinal frame portions 21 and 22 must extend sufficiently forwardly to provide stability for the apparatus 10 when it is hoisting and transporting a table 11, and to prevent tilting of the apparatus 10 by the table 11. In other words, the length of the longitudinal portions 21 and 22 must be such that the sum of the moments about the axis of the wheels 23 and 24 must equal zero. This will of course, depend upon the locations of the center of gravity of the combined table 11 and sewing machine 12 and the center of gravity of the apparatus 10, and the weight of the combined table 11 and machine 12 and the weight of the apparatus 10.

In order to operate the apparatus 10, for example to move the table 11 from an original stationary position to a new location, the apparatus 10 is manually pushed by the handle bar 22 toward and encompassing one end of the table 11, such as the right end disclosed in FIG. 1. The right end of the table 11 is received between the

frame portions 21 and 22 and brace arms 30 and 31. The jack handle or lever 39 is manipulated so that the hook 42 can be moved forwardly beneath the beam 15. When the roller 45 abuts against the lower portions of the legs 13 and 14, the reversing mechanism 40 on the jack head 38 is switched to the "up" position. The lever 39 is then reciprocated, moving the jack head 38 upwardly upon the rack bar 35 causing the hook 42 to firmly engage and lift the channel beam 15, causing the table 11 to be hoisted. The roller guide 45 maintains the legs 13 and 14 in vertical position so that the table top 16 will always be maintained level during the hoisting operation.

After the table 11 has been hoisted to the desired elevation, the operator stops reciprocating the lever 39, grasps the handle bar 32 and pushes the apparatus 10 carrying the table 11 in an elevated level position, such as disclosed in FIG. 1, to a new location. After the table 11 is vertically aligned in its desired position, reversing mechanism 40 is changed to the "down" position, the lever 39 is again manipulated to lower the jack head 38 and the hook 42 in a step-by-step movement until the legs of the table engage the floor 28. The downward movement of the jack head 38 is continued until the hook 42 has cleared the transverse beam 15, and the handle bar 32 is grasped to pull the apparatus 10 rearwardly away from the table 11.

It will be observed in FIG. 2, that the rack bar 35 is not exactly centered between the brace arms 30 and 31, but is spaced slightly closer to the brace arm 31. This off-center position of the rack bar 35 is designed to balance the various forces acting on the apparatus 10 and the sewing machine table 11, because of the shape of the legs 13 and 14, and also because of the off-center location of the sewing machine 12 on the table 11.

It will be apparent to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof, and therefore the invention is not limited by that which is shown in the drawings and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. An apparatus for hoisting and transporting a table, comprising:

- (a) a frame adapted to receive one end of said table, said frame extending longitudinally of said table,
- (b) supporting wheels mounted on said frame,
- (c) an upstanding rack mounted on said frame,
- (d) a jack head including a ratchet and pawl mechanism for step-by-step movement along said rack,
- (e) means for actuating said jack head,
- (f) hook means on said jack head adapted to engage beneath the top of said table to lift said table upon actuation of said jack head, and

(g) a transverse member fixed to said frame and spaced below and so located with respect to said hook means that said transverse member will guide the lower portion of said table vertically to maintain said table top level while said table is being hoisted and transported.

2. The invention according to claim 1 in which said frame is substantially U-shaped having a transverse portion and a pair of longitudinal portions extending from opposite ends of said transverse portion, said longitudinal portions being adapted to extend along opposite sides of said table.

3. The invention according to claim 2 in which said supporting wheels include a wheel mounted on each longitudinal portion of said frame remote from said transverse portion, and at least one caster mounted on said transverse portion.

4. An apparatus for hoisting and transporting a table comprising:

- (a) a U-shaped frame having a transverse portion and a pair of longitudinal portions extending from opposite sides of said transverse portion, said longitudinal portions being adapted to extend along opposite sides of said table,
- (b) supporting wheels mounted on said frame,
- (c) an upstanding rack mounted on said frame,
- (d) a jack head including a ratchet and pawl mechanism for step-by-step movement along said rack,
- (e) means for actuating said jack head,
- (f) means on said jack head for engaging the upper portion of said table to lift said table upon actuation of said jack head,
- (g) a transverse roller fixed to said frame and extending between said longitudinal portions and spaced adjacent said transverse portion for rollably engaging the lower portion of said table,
- (h) said transverse roller being spaced below said engaging means for guiding the lower portion of said table vertically while said table is being hoisted and transported.

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