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PROPELLED AND STEERED STEP STAND

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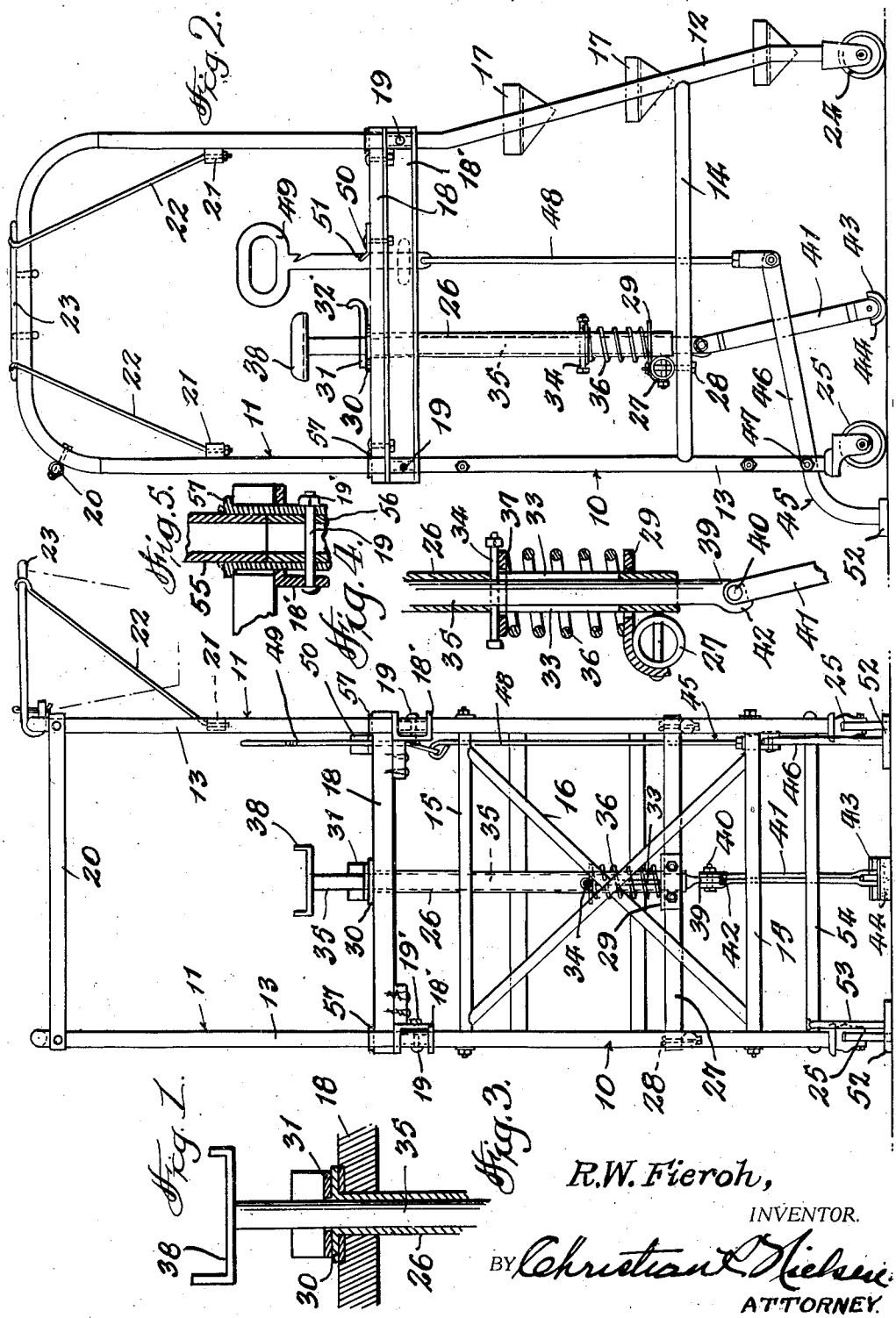


Fig. 2.

Fig. 5.

Fig. 4.

Fig. 1.

Fig. 3.

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PROPELLED AND STEERED STEP STAND

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4 Claims. (Cl. 304—9)

This invention relates to a propelled step stand and it consists in the constructions, arrangements and combinations herein described and claimed.

When it is necessary to decorate, paint walls and ceilings or clean lighting fixtures, various types of step ladders or step stands are employed, of non-ambulant type, which requires that the workman climb down from the ladder or stand each time that it becomes necessary to move the stand or ladder to a new location, and then the workman must climb up the ladder or stand all of which consumes a great deal of time, is tiresome and is the cause of many accidents.

It is therefore the cardinal object of the invention to provide a means for propelling and steering a step stand by a person on the stand, as well as providing a means for securing the stand against further movement until released.

Additional objects, advantages and features of invention will be apparent from the following description considered in conjunction with the accompanying drawing, wherein

Figure 1 is a rear elevation of a step stand constructed in accordance with the invention.

Figure 2 is a side elevation thereof.

Figure 3 is an enlarged vertical section illustrating the mounting of the support tube and propeller shaft.

Figure 4 is an enlarged vertical section showing a portion of the propeller means.

Figure 5 is a vertical section illustrating the demountable connection between the frame portions.

There is illustrated a stand 10 which may be of any approved construction, but is here shown as consisting of a pair of inverted U-shaped frame members 11, defining front and rear legs 12 and 13 connected adjacent the ends thereof by a strut 14. The rear legs are braced by struts 15 and crossed struts 16.

The front legs 12 are outwardly inclined from a point medially of their length and have mounted therebetween a plurality of steps 17.

A platform 18 is rigidly mounted between the front and rear legs in any approved manner, and is here shown as supported upon respective side channel bars 18', and secured by rivets or bolts 19.

Adjacent the bight portion of the frame members 11 and extending between the rear legs 13 there is a strut 20 which affords rigidity as well as functioning as a hand-hold, and upon one of the frame members 11, the front and rear legs are provided with sockets 21 for reception of arms 22 of a receptacle support 23, the latter also being engaged about the bight portion of the frame.

The front legs 12 are each provided with fixed casters 24 while the rear legs 13 each have a swivelled caster 25 thereon for ambulant support of the stand, the latter casters also effecting turning or steering movements of the stand, as will be explained in greater detail.

A pipe or tubing 26 is rotatably mounted in the platform 18, preferably at a point rearwardly of the vertical axis of the stand, extending downwardly therebelow to a point adjacent the struts 14 for securement to a cross strut 27. The strut 27 is extended across the struts 14 and bolted thereto as at 28, a plate 29 being mounted upon the strut 27 having an opening therethrough for passage of the tube 26 in a rotatable manner. As shown in Figure 3, the upper end of the tube 26 is flanged as at 30, and snugly rests upon a wear plate recessed within the platform.

It is intended that the tube 26 is to be rotated by pressure exerted by the foot of an operator, and to attain this end a foot lever 31 is rigidly secured to the flange and extends at right angles thereto as best seen in Figure 2. The outer end of the lever 31 is preferably rolled as at 32. It will be apparent that lateral pressure upon the lever 31 will effect rotation of the tube and mechanism associated therewith, and where a rotation of the tube 26 is made opposite to that shown, the step stand will be caused to travel in a reverse direction when the propeller mechanism, now to be described, is actuated.

Adjacent the lower end of the tube 26, a pair of opposed slots 33 are formed extending longitudinally and slidably receive a pin 34 of a reciprocating shaft 35. A helical spring 36 is mounted about the tube 26 interposed between the plate 29 and a washer 37 mounted beneath the pin 34. The spring functions to hold the shaft 35 at its raised or uppermost position, as shown in Figure 4.

The upper end of the shaft 35 terminates in a foot rest 38 whereby pressure thereon will cause downward movement of the shaft, for a purpose to be explained. The lower end of the shaft 35 terminates in a head 39 apertured to receive a pivot pin 40, the latter swingably mounting a propeller leg 41. The head 39 has a lug 42 for limiting swinging movement in one direction and maintaining the propeller leg at a proper angle. A foot 43 is pivotally mounted upon the lower end of the leg and is preferably provided with a suitable facing 44 to obtain a good grip upon a floor surface.

It will be noted that the foot rest 38 is provided with upright side walls 38' between which the

foot of an operator may be positioned. The walls 38' prevent slippage of the foot from the rest, when downward pressure is to be exerted upon the shaft 35, and also it will be seen that the tube 26 and associated mechanism may be rotated so as to attain a different direction of travel of the stand, by merely exerting a lateral turning movement of the foot.

To effect movement of the stand it is only necessary to exert downward pressure upon the foot rest 38. Such pressure will move the shaft 35 downwardly, compressing the spring 36 and forcing the foot 43 against the floor surface in a manner to effect rotation of the wheels of the casters 24 and 25. In the event that it is desired to turn the stand, the foot rest 38 is rotated in a desired direction which movement of the foot rest will rotate the tube 26 with corresponding movement of the leg 41 and the foot 43. Downward pressure is now exerted upon the foot rest 38 and the stand will then travel in the direction desired. This is possible by reason of the fact that the fixed casters 24 tend to move in a straight line or path and the swivel casters 25 will be caused to turn on their vertical axis by reason of pressure exerted upon the foot 43.

In order that the stand may be held against accidental movements upon a floor surface, a brake mechanism 45 is employed. A lever 46 is pivotally mounted upon one of the rear legs 13, as indicated at 47, one end of the lever being pivotally connected to a pull link 48. The link 48 is extended upwardly and is operatively connected to a hand grip 49 conveniently located upon the platform 18. A catch 50 mounted on the platform cooperates with notches 51 formed in the shank of the hand grip to hold the brake shoes 52 in operative engagement with a floor surface. A pair of brake shoes 52 are employed, one being connected to a downwardly curved portion of the lever 46, while the other brake shoe is mounted upon a lever 53 fixed to a rockable shaft 54 which in turn is rigidly connected to the lever 46. By this construction, a single hand grip and associated levers function to actuate the brake shoes in unison.

In order to facilitate packing for shipment, the upper portion of the frame members 11 may be formed in separable relation with the lower portion of the frame. As shown in Figure 5, the legs 12 and 13 are separate sections 55 and 56, the section 55 having a sleeve 57 rigidly secured thereto by welding or the like. The sleeve 57 is of a diameter to snugly receive the section 56 therein. The channel bars 18', the sleeve 57 and the leg sections 56 are each provided with aligned apertures for reception of a bolt 19 upon which there is threadedly secured a nut 19'. The leg sections will thus be securely held together, yet may be readily dismantled for packing and shipment.

The framework constituting the stand may be made of varying heights to meet specific situations. For instance, the stand is highly efficient in factories, particularly in the assembly of aeroplanes and the like, where a workman is required to attain considerable heights, and the framework and other parts would be proportioned accordingly.

While I have shown and specifically described my invention, this is by way of illustration only, and I consider as my own all such modifications in construction as fairly fall within the scope of the appended claims.

I claim:

1. A step stand comprising an upright frame work of substantial height having a pair of front legs and a pair of rear legs, steps connecting the front legs, struts connecting the back legs, a platform mounted between said front and rear legs at a point above the uppermost step, a longitudinally extended strut connecting respective front and rear legs, a strut extended transversely across said last named strut and fixed thereto, a tube rotatably extended through said platform of a length to be rotatably supported by said transverse strut, means on the upper end of the tube for manually turning the tube, a shaft reciprocably mounted in the tube, the upper end of which has a foot rest connected therewith and positioned at a point above the platform, the lower end of the shaft having a head, a leg pivotally mounted on said head, a foot pivotally connected to the leg for contacting engagement with a supporting surface, said leg normally having a position inclined to the vertical axis of the shaft, spring means for holding the shaft, leg and foot in raised, inoperative position, fixed casters on the lower extremities of the front legs and swivelled casters on the rear legs.

2. The structure of claim 1 in which a brake means is carried by the frame work including brake shoes adapted to engage the supporting surface, means on the platform for moving the brake shoes into operative position, and means for locking said last named means.

3. A step stand comprising an upright frame work of substantial height having front and rear legs, steps connecting the front legs, struts connecting the rear legs, a platform mounted between said front and rear legs at a point above the uppermost step, a longitudinally extended strut connecting respective front and rear legs, a strut extended transversely across said last named strut and fixed thereto, a tube rotatably extended through said platform of a length to be rotatably supported by said transverse strut, means on the upper end of the tube for manually turning the tube, a shaft reciprocably mounted in the tube, the upper end of which has a foot rest connected therewith and positioned at a point above the platform, the lower end of the shaft having a head, a leg pivotally mounted on said head, stop means to limit pivotal movement of the leg, a foot pivotally connected to the leg for contacting engagement with a supporting surface, said leg normally having a position inclined to the vertical axis of the shaft, said tube having opposed slots extending upwardly from a point adjacent the end thereof, a helical spring disposed about the tube at the position of the slots and anchored at its lower end, a pin member on the reciprocating shaft disposed through the slots and above the upper end of the spring, a fixed caster on the lower extremity of the front legs, swivelled casters on the rear legs; a brake mechanism, said brake mechanism comprising a rod rockably mounted between the back legs, a pair of brake shoes connected to said rod adapted to contact a supporting surface, a lever connected to the rockable rod, a hand grip mounted upon said platform, a pull link connected between said hand grip and the lever whereby to move the brake shoes into contacting engagement with the supporting surface and means on the platform cooperable with the hand grip to hold the brake shoes in operative position.

4. A propelled and steered step stand comprising an upright frame work having front and rear legs, a platform mounted betwen said front and

rear legs, a longitudinally extended strut connecting respective front and rear legs, a strut extended transversely across said last named strut and fixed thereto, a tube rotatably extended through said platform of a length to be rotatably supported by said transverse strut, means on the upper end of the tube for manually turning the tube, a shaft reciprocably mounted in the tube and having a foot rest at its upper end, positioned above the platform, a leg pivotally mounted on the lower end of the shaft, a foot pivotally mounted on the leg for contacting engagement with a supporting surface, said leg normally having a position inclined to the vertical axis of the shaft, spring means for holding the shaft, leg and foot in raised inoperative position, fixed casters on the lower extremities of the front legs and swivelled casters on the rear legs.

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