June 13, 1944. M. L. PEARSON 2,351,145

STILT

Filed Aug. 17, 1943 2 Sheets-Sheet 1

Fig. 1.

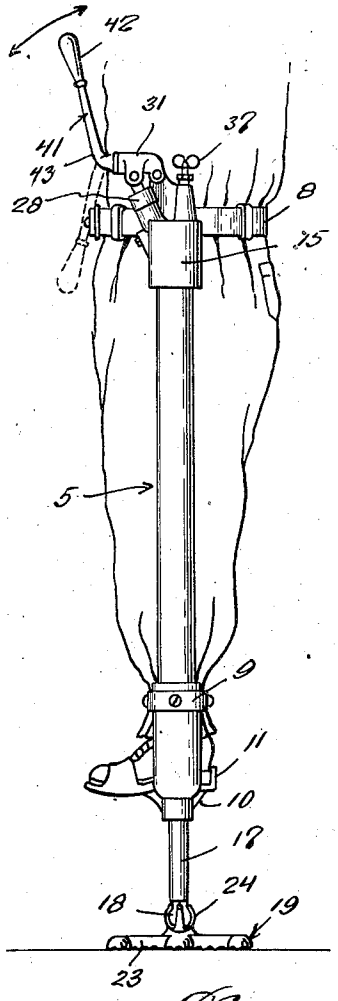


Fig. 2.

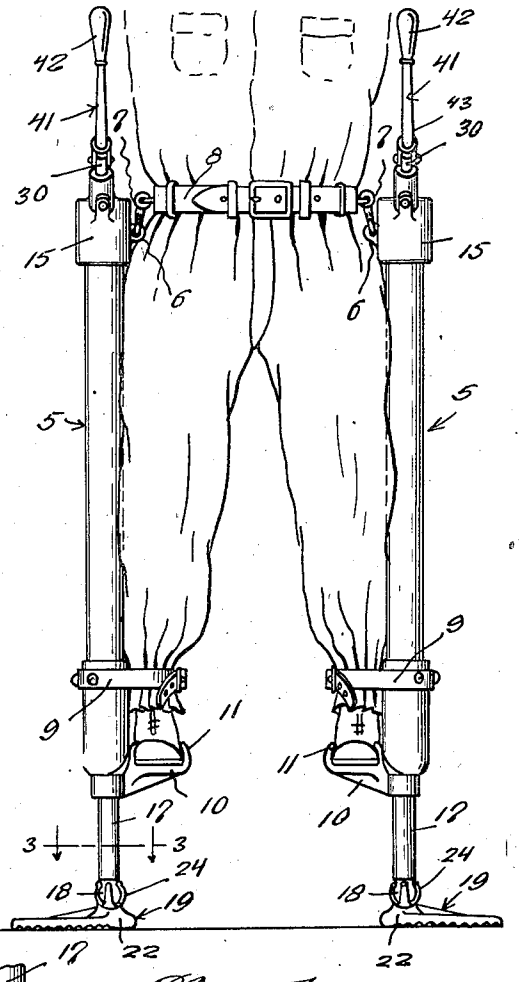


Fig. 3.

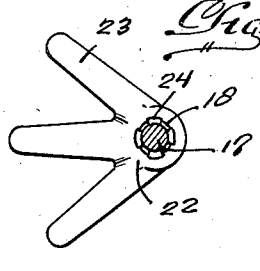
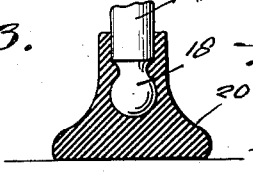


Fig. 4.



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June 13, 1944. M. L. PEARSON 2,351,145

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Filed Aug. 17, 1943 2 Sheets-Sheet 2

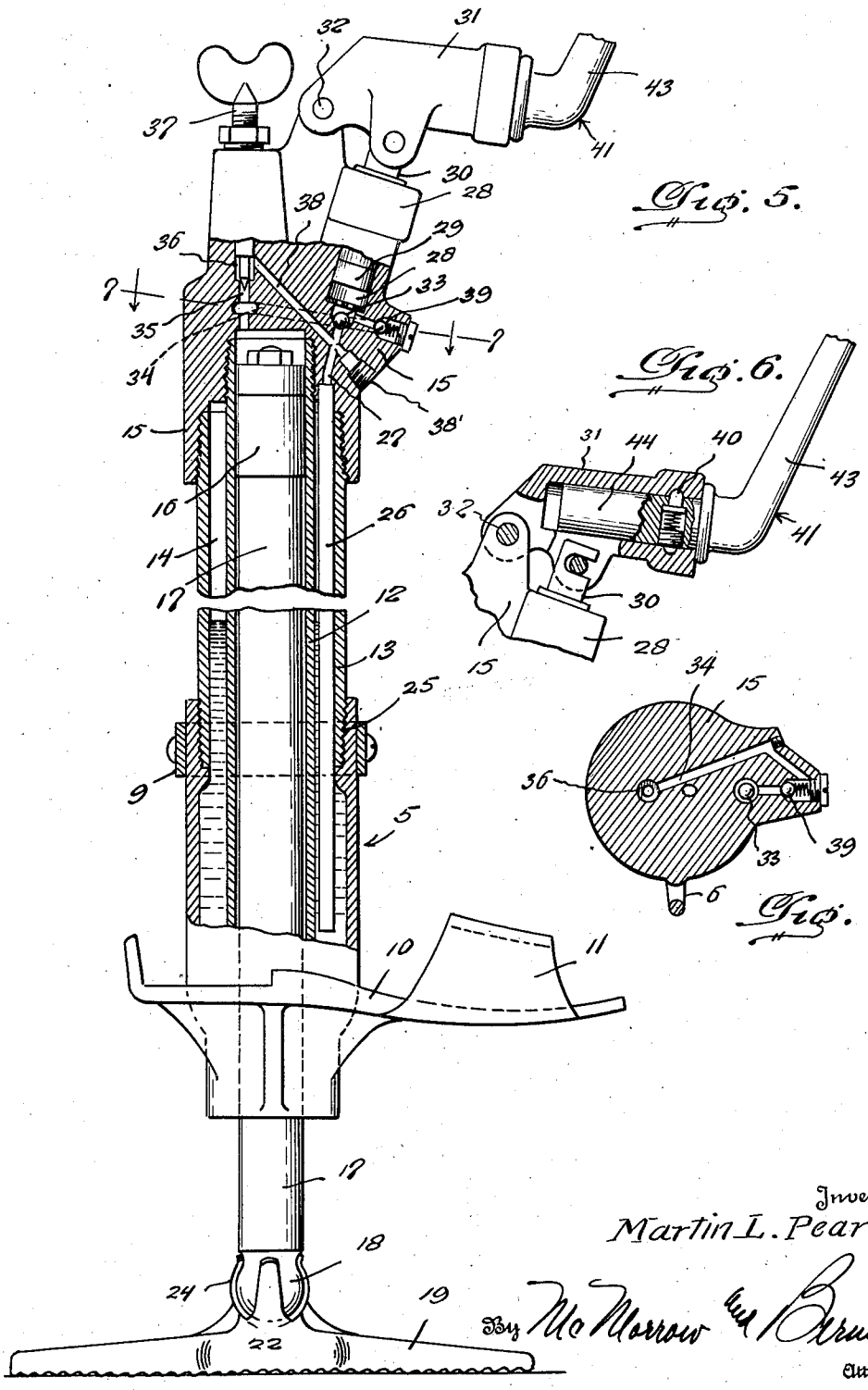


Fig. 5.

Fig. 6.

Fig. 7.

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Patented June 13, 1944 2,351,145

UNITED STATES PATENT OFFICE

2,351,145

STILT

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Application August 17, 1943, Serial No. 498,953

6 Claims. (Cl. 272—70.1)

This invention relates to stilts especially adapted for workmen engaged in various kinds of work that require operations at various elevations which may be beyond the normal reach of the workmen. The primary object of the invention is the provision of hydraulic stilts which may be conveniently applied and worn by a person while at work and will permit such person to stand or walk without undue interference or fatigue and to work at various elevations, some of which are beyond the reach of a person in a standing position, consequently providing a portable and safe means for a person to carry out work rapidly at different elevations and eliminate the use of expensive equipment, such as scaffolding, ladders and the like heretofore employed.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a side elevation diagrammatically showing a portion of a person standing on stilts constructed in accordance with the present invention.

Figure 2 is a front elevation showing the stilts and the means of applying the same to the person.

Figure 3 is a detail sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a fragmentary sectional view illustrating a modified form of foot piece.

Figure 5 is a side elevation, partly in section, illustrating one of the stilts.

Figure 6 is a fragmentary sectional view illustrating the connection between an operating handle and the pump of the hydraulic stilts.

Figure 7 is a sectional view taken on the line 7—7 of Figure 5.

Referring in detail to the drawings, the numeral 5 indicates generally hydraulic type stilts equipped adjacent the upper ends with eyelets 6 to be engaged by snap fasteners 7 secured on opposite sides of a waist-encircling belt 8. Ankle straps 9 are secured to the stilts 5 adjacent the lower ends thereof and adapted to be fastened about the ankles of a person standing on the foot rests 10 of the stilts. The foot rests are of the type provided with upstanding flanges 11 to prevent the person's shoes from slipping from the rests during the use of the device. The straps 9 are of the adjustable type so that the tautness thereof on the ankles of the person can be varied and also may be detached to permit the stilts to be removed.

The waist-encircling belt 8 is adjusted tightly about the waist of the person, which with the foot rests and angle straps 9 secure the stilts to parallel the outer sides of the legs leaving the upper portion of the body and the arms of the person free to carry out work and for the manipulation of the hydraulic stilts.

Each stilt 5 consists of inner and outer cylinders 12 and 13 cast together at their lower ends to form a fluid chamber 14. The upper ends of the cylinders 12 and 13 are externally screw threaded and thread into a head 15. The cylinder 12 receives a piston 16, the stem 17 of which extends outwardly of the cylinder assembly and terminates in the form of a ball 18 and has adapted thereto either a foot piece 19 or a foot piece 20. The foot piece 20 is of a cushion type having a socket to frictionally receive the ball 18 and a portion of the stem and may be readily applied and removed when desired. The foot piece 19 is in the form of a rigid plate 22 provided with diverging portions 23 that cooperate with each other and the plate in forming a comparatively broad bearing surface to contact the ground or a floor.

The plate 22 has formed thereon spring fingers 24 to receive and grip the ball. The fingers receiving the ball 18 will permit the stem of the piston to pivot relative to the foot piece 19 allowing the latter to readily adjust itself to the plane of the surface engaged.

The foot rest 10 is cast integrally with the lower end of the cylinder assembly, as clearly shown in Figure 5. The outer cylinder 13 may be of sectional formation and detachably connected, as shown at 25.

A suitable fluid is arranged in the chamber 14 and a suction pipe 36 extends into the fluid and is carried by the head 15 and connected with a passage 27 thereof. The passage 27 leads into a pump cylinder 28 formed in the head and in which operates a piston 29, the stem 30 of which is pivotally and slidably connected to an operating medium 31 pivotally mounted on the head, as shown at 32. A check valve 33 operates in the passage 27 to permit the fluid to flow into the pump cylinder from the chamber 14 by the actuation of the piston 29. A passage 34 connects with the pump cylinder 28 and to a passage 35 formed in the head 15 and which connects with the upper end of the cylinder 12 and also with

a valve chamber 36 formed in the head 15 and in which is mounted a valve assembly 37. A passage 38 formed in the head 15 leads from the passage 36 to the passage 27 and outwardly of the head and is normally closed by a removable plug 38'. The passage 34 has located therein a check valve 39, the purpose of which is to permit the fluid to flow from the pump cylinder into the cylinder 12 for action on the piston 16. The purpose of the valve assembly 37 is to permit the fluid acting on the piston 16 to be drained and return to the chamber 14.

The operating medium 31 is in the form of a socketed head having an internal annular groove to receive spring influenced detents 40 carried by a lever 41. The lever 41 includes a handle 42, a shank 43 and an attaching portion 44. The attaching portion 44 carrying the detent is angularly disposed with respect to the shank 43 and is rotatable within the socketed head of the operating medium. This construction will permit the handle 41 to be either swung upwardly or downwardly with respect to the person using the stilts.

The levers when swung downwardly are out of the way of the arms and hands of the person using the stilts and when swung upwardly are in convenient position to be operated by the person's hands. The operation of the levers by the person using the stilts will bring about forcing of fluid from the chambers 14 into the cylinders 12 against the pistons 16, causing said pistons to travel and extend the foot pieces, or in other words, bring about the elevation of the person on the stilts. For the person to lower himself on the stilts, it is only necessary to operate the valve assemblies 37 to bleed the cylinders 12 to permit the flow of fluid from said cylinders 12 to the chambers 14. It will, therefore, be seen that the stilts can be conveniently operated while applied to the person and by said person through the operation of the levers for raising the person to a desired elevation or to lower the person by operating the valve assemblies.

The fluid may be placed in the chamber 14 under pressure by simply removing the plug 38.

It will be seen from the foregoing description that efficient hydraulic type stilts have been provided which may be easily and quickly applied to a person and when worn will permit the person to walk without inconvenience or to stand to carry out work with a minimum amount of fatigue. Further, it will be seen that the person wearing the stilts can raise and lower himself to reach work at different elevations normally beyond the reach of the person when in a standing position upon a floor or other supporting surface.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described my invention, what I claim is:

1. In stilts for workmen, hydraulically operated stilt elements, and means for detachably securing said stilt elements to a person whereby said person may stand and walk and carry out operations at various elevations.

2. In stilts for workmen, hydraulically operated stilt elements including operating levers for the extending of said stilt elements and valve mechanisms for the retraction of said stilt elements, and means for detachably securing said stilt elements to a person whereby said person may stand and walk and carry out operations at various elevations.

3. In stilts for workmen, hydraulically operated stilt elements, foot rests on said stilt elements, and a waist-encircling belt detachably connected to the stilt elements.

4. In stilts for workmen, hydraulically operated stilt elements, foot rests on said stilt elements, a waist-encircling belt detachably connected to the stilt elements, and adjustable ankle straps connected to the stilt elements adjacent the foot rests.

5. In stilts for workmen, hydraulically operated stilt elements including pivotal and detachable foot pieces, and means for detachably securing said stilt elements to a person.

6. In stilts for workmen, hydraulically operated stilt elements each including pumps operated by hand levers mounted for rotation whereby said hand levers may be directed upwardly or downwardly and valve means for release of fluid pressure, and means for detachably securing the stilt elements to a person whereby said person may stand and walk and carry out operations at various elevations.

MARTIN L. PEARSON.