July 13, 1954 H. F. J. BERNAERTS 2,683,277

COMBINED FOOT AND ROLLER

Filed Jan. 22, 1951

FIG.1

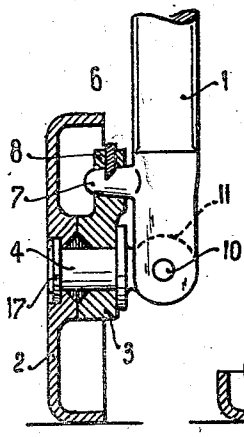


FIG.2

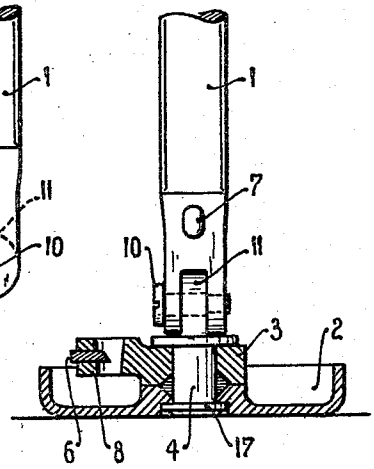


FIG.3

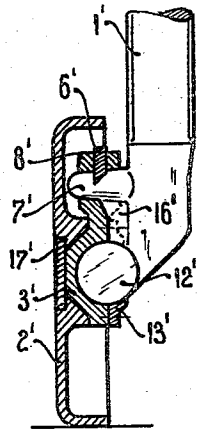


FIG.4

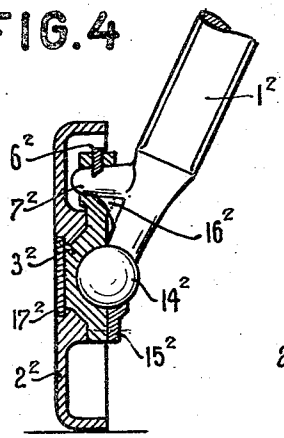
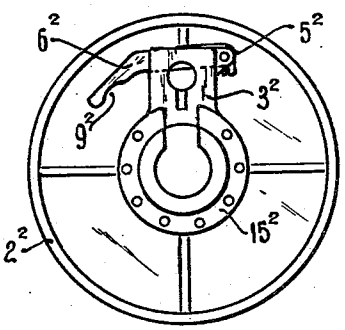


FIG.5



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COMBINED FOOT AND ROLLER

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7 Claims. (Cl. 16—18)

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The invention refers to a lifting jack with a central lifting column, said column being supported of three or more legs, each leg being provided with a footplate (see e. g. U. S. specifications 2,341,542 and 2,487,792).

Such lifting jacks are used for lifting heavy objects, particularly aircraft for control, repair and maintenance. An object of the invention consists in increasing the handability of such lifting jacks which often have to be transported over large distances in repairshops, booths or hangars.

According to the invention the lifting jack is constructed in such a way that it can be wheeled by means of one or more of the footplates in a vertical position of such a plate. In this way the footplates of the lifting jack perform two functions. During lifting operations they support the weight of the object to be lifted and during transport they function as wheels which enable an easy transport over large distances.

Preferably one or more footplates consist of a wheel disk said disk being rotatably connected with a swinging shaft, said shaft being carried by the leg. The swinging connection between shaft and leg may be constructed in different ways. It is possible to use a ball and socket joint which enables universal positioning of the footplate. It is also possible to use a double joint or cardan joint which provides the same possibilities. In some cases it is sufficient to use a single joint. In this case the swinging shaft and the leg are mutually connected by means of a cylindrical cross-member of the one part, said member being inserted in a cylindrical socket of the other part.

The leg may be provided with a locking pin said pin engaging a corresponding bore in a lug of the shaft. Said arrangement shows advantages over an arrangement in which the shaft carries a pin engaging a bore of the leg, for by such a bore the leg would be weakened. The pin of the leg may be provided with a notch for a latch carried by the shaft. The swinging shaft and the leg may be mutually supported in the vertical position of the wheel disk by means of a rib and a corresponding slot.

The drawing shows some embodiments of a lifting jack according to the invention.

Fig. 1 gives a longitudinal section of a leg with a footplate in the form of a wheel disk.

Fig. 2 shows the parts of Fig. 1 in a position in which the footplate is swung downwards.

Figs. 3 and 4 give longitudinal sections of a second and third embodiment of the invention.

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Fig. 5 gives a front view of the inner side of the footplate.

In Fig. 1 the leg 1 of a lifting jack, the central column of it is not shown in the drawing, said central column being supported by three of such legs. When the lifting jack is in use for supporting a heavy object, the footplate 2 is positioned as indicated in Fig. 2. From this position the swinging shaft 3 may be swung with respect to the leg 1 in such a way that the axle 4 of the footplate 2 which has the shape of a wheeldisk comes in a horizontal position (Figs. 1, 3 and 4). In this position the shaft may be latched by means of a latch 6 snapping into a notch of a locking pin 7, said pin engaging a bore of a lug 8 of the shaft 3.

As may be seen from Fig. 5 the latch 6^2 may be lifted against pressure of the spring 5^2 by means of a handle 9^2 in order to unlock the latch 6^2 and to swing back the footplate 2^2 in the horizontal position. In the embodiment of Figs. 1 and 2 a single joint is used with a shaft 10 inserted through bores of legs of the U-shaped end of the leg 1, said legs enclosing a lug 11 of the axle 4.

In the embodiment of Figs. 3 and 4 the leg 1' carries a cylindrical cross-member 12' which is inserted in a corresponding socket of the shaft 3' which is locked by means of a closing disk 13'. The described embodiments have a footplate, which shows in unlocked position a limited adaptability to unevennesses of the ground. However, the embodiment of Fig. 4 shows a universal adaptability to such unevennesses for in this case a ball and socket joint is used. The ball shaped end 14^2 of the leg 1^2 is supported in a socket of the shaft 3^2 which is closed by means of a closing disk 15^2.

In order to improve the connection between the leg 1' and the shaft 3' in the locked position of the shaft (Fig. 3), the leg is provided with a rib 16' joining the pin 7', said rib engaging a corresponding groove of the shaft 3'.

In the described embodiments the foot plate 2' which has a shape of a wheel disk may be locked against shifting on the axle 4', respectively the shaft 3' by means of a locking plate 17', which is secured to the axle 4 of Figs. 1 and 2 or to the shaft 3' of Fig. 3 or to the shaft 3^2 of Figs. 4 and 5 by any conventional means, as by spot welding.

What I claim is:

1. In combination; a leg of a lifting jack and a supporting structure therefor, said supporting structure comprising a swinging shaft, swinging connection means between the said swinging shaft and the lower end of the said leg, a foot plate formed as a wheel disc rotatably mounted on the

said swinging shaft, swinging together with the said swinging shaft into a horizontal position of the footplate for supporting the jack and into a vertical position of the footplate for wheeling the jack, respectively, and means disposed adjacent to the lower end of the said leg for releasably securing the said foot plate in vertical wheeling position.

2. The leg and supporting structure, as set forth in claim 1, in which the said swinging connection means between the said swinging shaft and the lower end of the said leg comprises a single joint which includes a U-shaped formation having two parallelly disposed arms at the lower end of the said leg, said arms of the U-shaped formation having aligned bores, a lug extending from the said axle and received in the space between the said arms, the said lug having a bore being aligned with the said bores of the said arms, and a second shaft extending through the said bores of the arms and of the lug and connecting the said axle with the said leg for rotation upon said second shaft.

3. The leg and supporting structure, as set forth in claim 1, in which the said swinging connection means between the said swinging shaft and the lower end of the said leg comprises a cylindrical cross-member secured to the lower end of the said leg, the said swinging shaft includes a socket receiving the said cylindrical cross-member, and a closing disc secured to the said swinging shaft to lock the said cylindrical cross-member in the said socket.

4. The leg and supporting structure, as set forth in claim 1, in which the said swinging connection means between the said swinging shaft and the lower end of the said leg comprises a ball secured to the lower end of the said leg, the said swinging shaft includes a socket receiving the said ball, and a closing disc secured to the said swinging shaft to lock the said ball in the said socket.

5. The leg and supporting structure, as set forth in claim 1, in which the said means disposed adjacent the lower end of the said leg for releasably securing the said foot plate in vertical wheeling position comprises a pin extending from the said leg, the said swinging shaft has a lug disposed opposite the said pin of the leg in vertical wheeling position of the said swinging shaft, the said lug has a bore to receive the said pin of the leg, and means for securing the said pin in the said lug of the swinging shaft.

6. The leg and supporting structure, as set forth in claim 1, in which the said means disposed adjacent the lower end of the said leg for releasably securing the said foot plate in vertical wheeling position comprises a pin extending from the said leg, the said swinging shaft has a lug disposed opposite the said pin of the leg in vertical wheeling position of the said swinging shaft, the said lug has a bore to receive the said pin of the leg, the said lug has pivotally secured thereto a latch and the said pin has a notch receiving the said latch in order to lock the swinging shaft in vertical wheeling position.

7. The leg and supporting structure, as set forth in claim 1, in which the said foot plate has a recess, and a locking plate disposed in the said recess to secure the said foot plate to the said swinging shaft.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
887,663	Lee	May 12, 1908
1,358,092	Millard	Nov. 9, 1920
1,396,128	Kopplin	Nov. 8, 1921
1,638,725	Chestnutt	Aug. 9, 1927
2,487,792	Custer	Nov. 15, 1949
2,572,348	Johnson	Oct. 23, 1951