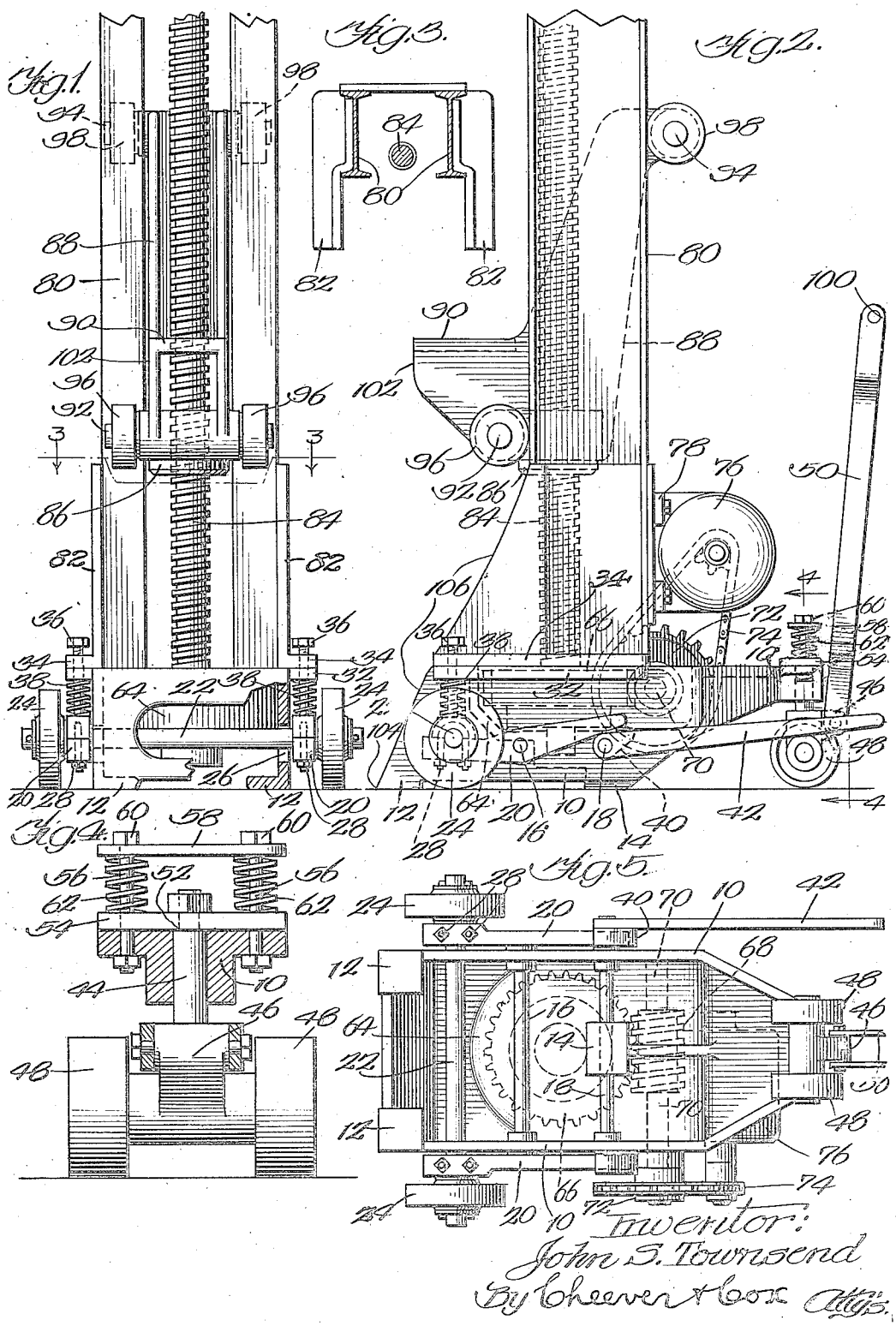
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J. S. TOWNSEND

PORTABLE JACK

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PORTABLE JACK.

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To all whom it may concern:

Be it known that I, JOHN S. TOWNSEND, a citizen of the United States, residing at Harvey, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Portable Jacks, of which the following is a specification.

This invention relates to heavy duty lifting jacks for engagement with locomotives, cars or the like. The object of the invention is to provide a jack of this type which is strong enough to lift up to say fifty tons at the point where it takes hold of such a heavy object and do it with entire safety which is yet when unloaded readily transportable from one working point to another and which is so shaped that it will work very close to work lying close to the ground.

Jacks of this type are ordinarily used in sets of two or four, half of the number specified being used on each opposite side of the car or locomotive to be lifted. They are moved to position with reference to the object they are lifting thru passage spaces or aisles adjacent to the object to be lifted and as these aisles are very apt to be narrow, a further object of the invention is to provide a device of this character in which the longest dimension of the parts which approach the floor is relatively short so that the mechanism may be moved down an aisle then turned at right angles to itself and moved under the load to be lifted in a very short space.

The invention consists in such a jack which is perfectly safe because when in lifting operation it rests firmly on the ground or floor and thereby insures stability in lifting; in which a self contained motor mechanism is provided for doing the lifting no matter where the device may be located in actual use, and in numerous details and features of construction to be hereafter more fully set forth in the specification and claims.

Referring to the drawings in which like numerals represent the same parts thruout the several views.

Figure 1 is a face view of a jack illustrating this invention in its preferred form, viewed from the side which is to approach the work to be lifted or from the left hand side of Figure 2.

Figure 2 is a side view of the mechanism of Figure 1.

Figure 3 is a detail plan view, taken on the line 3—3 of Figure 1.

Figure 4 is an end view taken on the irregular line 4—4 of Figure 2.

Figure 5 is a bottom view of the device of Figure 2.

In the preferred mechanism, in the drawings a truck body frame 10 has extending downwardly from it three supporting feet 12 and 14, arranged in a triangular form to insure contact with the floor or ground when lifting is to take place. Extending transversely of frame 10 are two spaced apart horizontal shafts 16 and 18. Outside the frame 10 and mounted on the ends of shaft 16 are two parallel levers 20 of the first class. On the corresponding end of each lever 20, which most closely approach the feet 12, referred to, is mounted another transverse shaft 22 carrying at its opposite ends traction wheels 24 of any convenient construction. This shaft 22 is capable of vertical reciprocation in elongated slots or notches 26 provided in the frame for it. Shaft 22 is provided intermediate between the side walls or box 10 and the wheels 24 with collars 28, from which vertically extend rods 30, freely reciprocatable except as controlled by limiting stop nuts 36, thru flanges 32 and 34 hereafter referred to. These rods 30 are encased with compression springs 38 which take bearing on the collars 28 and the under sides of the flanges 32 and tend to normally force the shaft 22 and consequently the wheels 24 downward so that the wheels tend to engage the floor or ground over which they are to travel except as hereafter set forth. Springs 38 are normally made of sufficient strength so that when the truck is unloaded they will force the wheels 24 downward with sufficient force that they almost, but not quite, lift the truck sufficiently to take it off from the feet 12 and 14.

The remaining ends of levers 20 each overlap a short lever or cam member 40 carried by shaft 18 heretofore described. When that shaft is rocked by an operator's manipulating hand lever 42 from the position shown in Figure 2 in a counter clockwise direction, the short cam levers 40 forceably rotate levers 20 to force the wheels 24 downward to carry the truck with the feet 12 and 14 clear of the ground or floor.

At the extreme right hand end of the truck frame 10 is pivoted a vertical shaft

44 whose lower end is rigidly attached to a block 46 journaled on a pair of front truck wheels 48. Suitably attached to the block 46 is a pull shaft or handle 50 by which the operator may move the entire truck device around.

The upper end of shaft 44 is shouldered at 52 on a plate 54 placed across the adjacent end portion of the frame 10. Slidably mounted thru this member 54 and adjacent part of frame 10 are bolts 56 carrying springs 62, bearing on the member 54 and against a cross bar 58 held in place by the head 60 of the bolts 56. These springs 62 are of such a tension that under normal conditions there is no movement of the parts named, but that in the event of there being a severe upward pressure under the wheels 48 and along the shaft 44, this shaft can push member 54 upward against the tension of these springs 62 and thus avoid trouble.

The upper part of the frame 10 is closed or covered by a recessed cap or plate terminating at its outside edges in the flanges 32, heretofore referred to, and having at its central portion a hollowed recess 64 within which is located a standard horizontally disposed worm gear 66 and worm 68 intermeshing therewith, the latter being carried on a shaft 70, which at its outer end carries a sprocket wheel 72 over which passes a sprocket chain 74 driven by an electric motor 76 carried on a bracket 78 supported on parallel vertical I-beams 80 extending vertically upward, as clearly shown in the drawings. The lower ends of these I-beams 80 take suitable bearing on the top of the truck and are rigidly secured in position thereon by suitably formed bracket member 82, clamping the beams as shown in Figure 3 and terminating in the horizontal flanges 34 heretofore referred to, thru which they are rigidly secured to the truck by conventional bolts or screws, not shown, entering the adjacent flanges 34 of the truck body.

The worm wheel 66 carries and drives a vertical lifting screw 84 extending upwards between the beams 80. Threaded on this screw 84 is a nut 86 suitably attached by any suitable means to a step casting 88, preferably of the peculiar construction shown in the drawings, arranged to lie and move between the beams 80 and afford on one side a lifting foot 90, and a horizontal extending shaft 92, and on the other side of the beam a parallel horizontal extending shaft 94, there being carried by each of these shafts 92 and 94 thrust wheels 96 and 98, respectively, adapted to bear on the adjacent flange of beam 80, this for the purpose of sustaining the load while the screw drives it upward or downward.

In the operation of the lifting part of the mechanism, electric current is supplied from any convenient source, for the motor 76, to cause it to rotate and thus thru sprocket chain 74, drive the worm 68 and the work wheel 66 to rotate the screw 84. This latter movement causes the nut 86 and the entire step casting to travel upward or downward, as the case may be, to raise or lower the load carried by the lifting foot 90.

In the operation of the complete device, assume that the truck is not near the work to be lifted and is to be moved to such position:—the operator takes hold of lever 42, moves it upward in a counter clockwise direction, throws the wheels 24 downward below the level of the feet 12 and 14, thereby lifting the entire device upward onto these wheels; the operator now takes hold of the handle 100 on the end of member 50 and pulls the device in the ordinary way in which he would pull a child's cart, to the work to be lifted and places the device with the load carrying foot 90 first adjacent to and then under the edge of the load to be lifted; moving this foot up or down under the control of motor 76, as may be necessary to get it into proper position. The operator now takes hold of lever 42 and moves it from the last described position downward to the position shown in the drawings, thus allowing the mechanism to rest on the feet 12 and 14 and taking all possible strain off from the wheels 24. If, in this position because of any irregularity in the floor on which the tool is working, the wheels 48 still partially support the truck, the springs 62 allow these wheels to move upward to be relieved from the pressure of the load, thus seating the device on the feet 12 and 14 just as soon as the operator begins to lift the load to be lifted by now starting motor 76 for this pupose. When the motor is so started, the mechanism 90—98 moves upward along the I-beams 80, thus lifting the load with full bearing on the feet 12 and 14.

When the operator has performed what operation he desires on the load, he moves the lifting feet 90 downward so that to clear the load he has only to reverse the operation just described to easily and quickly remove the truck from proximity to the load to be lifted, away for the next use.

Particular attention is called to the fact that the two feet 12, frequently referred to, are located outside of the path of travel of the extreme outer end 102 of the lifting foot 90, so that there is no possibility of a load on the foot 90 rocking the entire device, as viewed in Figure 2, in counter clockwise direction about the ends of the feet 12 and thus tipping the jack over, also that the supporting members 82 are cut back from the points 104 on the feet 12 in the sharply

inclined line 106 leading as rapidly as possible back to the I-beams 80, thus allowing a maximum clearance as regards this line 106 with any work which the device approaches. This has particular valuable bearing in connection with removing railroad car trucks, themselves which are located close to the ground, from the truck wheels. (In this case the truck is suspended from foot 90 by chains or the like.) This construction enables the user to successively use the same tool in lifting a railroad car off from its truck and thereafter in lifting the railroad truck off from the wheels.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In mechanism of the class described, a truck frame, a vertically disposed lifting screw rising from the frame, power means driving said screw, a load lifting foot, propellable by said screw having its end extending to a vertical line at one edge of the frame, a pair of feet on the bottom of the truck frame, across said edge of the frame and a bracing member starting at said feet and extending in a sharply angular line 106 over to the lifting screw, for the purposes set forth.

2. In mechanism of the class described, a truck frame carrying a load lifting mechanism, a plurality of feet on the truck frame adapted to rest on the floor, a pair of parallel levers pivoted on opposite sides of the frame, a traction wheel carried by a given end of each lever, manually operated means engaging the other ends of said levers for moving said levers to move said wheels to take the load of the frame off from said feet and put it on said wheels, and spring mechanism urging said wheels to said last position.

3. In mechanism of the class described, a truck frame carrying a load lifting mechanism, a plurality of feet on the truck frame adapted to rest on the floor, a pair of parallel levers pivoted on opposite sides of the frame, a traction wheel carried by a given end of each lever, and manually operated cam means engaging the other ends of said levers for moving said levers to move said wheels to take the load of the frame off from said feet and put it on said wheels, for the purposes set forth.

4. In mechanism of the class described, a wheel device, a vertical shaft extending upward from the wheel device, a truck frame part pivotally and reciprocatively mounted on said shaft, a pair of horizontally disposed separated parallel plates above the truck frame member, compression springs between said plates, bolts thru said springs, said plates and said frame member, and means by which the upper end of said shaft may move the lower plate toward the upper against said springs, for the purposes set forth.

5. In mechanism of the class described, a pair of parallel truck frame members, a pair of levers (20) on opposite sides of said frame, a wheeled shaft (22) carried by the corresponding end of each lever, another shaft (18) adjacent to the other ends of said levers, a cam 40 for each lever on said last shaft, means for rocking said last shaft, and supporting feet for the frame adjacent the wheels, for the purposes set forth.

6. In mechanism of the class described the combination of a pair of vertical separated I-beams, a vertical screw between said beams, a step casting member 88, extending diagonally between said beams, wheels on said casting engaging and traveling on opposite sides of said beams, a nut carried by said casting engaging said screw and a load carrying step on said casting, all the parts being shaped as described, for the purposes set forth.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

JOHN S. TOWNSEND.

Witnesses:
O. L. COFFEY,
S. T. SJOBERG.