Feb. 24, 1931. E. D. ANDERSON ET AL 1,794,052

ADJUSTABLE HORSE

Filed June 13, 1927

Fig. 1.

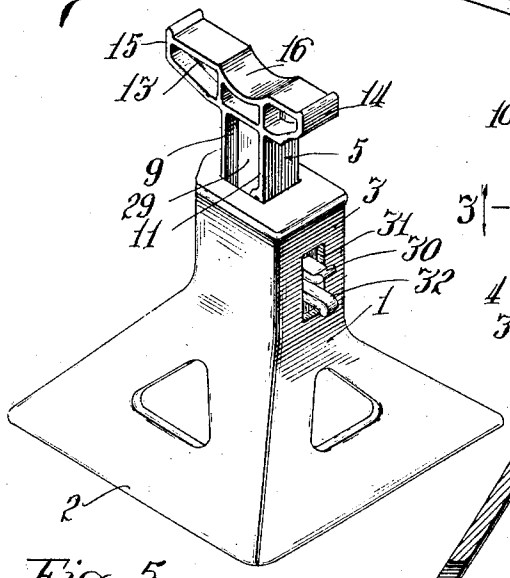


Fig. 2.

Fig. 5.

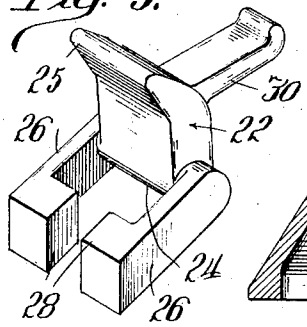


Fig. 3.

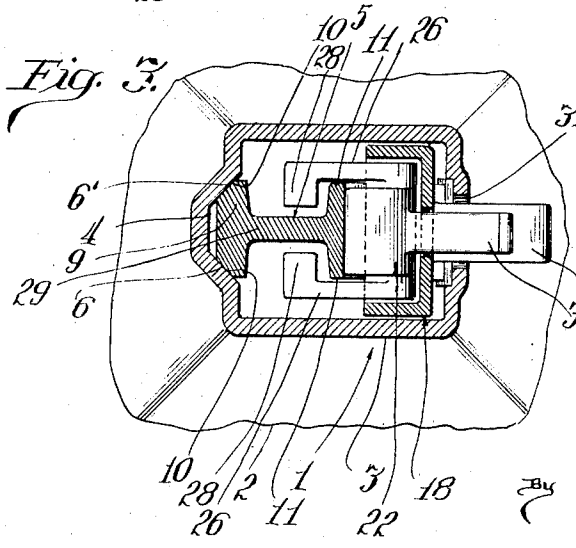
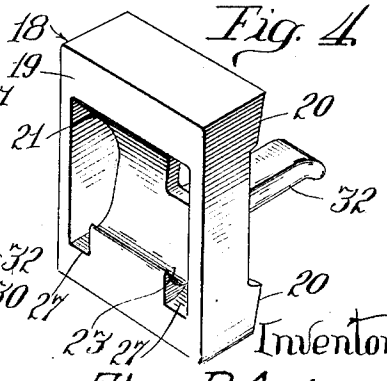


Fig. 4.



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UNITED STATES PATENT OFFICE

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ADJUSTABLE HORSE

Application filed June 13, 1927. Serial No. 198,387.

This invention relates to an adjustable horse for supporting loads in elevated positions. The device is particularly adapted for use in garages, when there is considerable service work to be done upon a car. The car is elevated by means of a suitable lifting jack and placed upon these stands or horses while the work is being done.

More specifically, the improved horse comprises a supporting standard and a load-supporting post or bar adjustable vertically through this standard to vary the effective height of the horse. Means are provided to support the post against downward movement in its vertically adjusted positions, and at the same time hold the post rigidly against lateral movement in the standard so that all side-play is eliminated, and a stiff and rigid support is maintained when under load.

The general object of this invention is to provide an adjustable horse comprising two relatively movable telescoping parts, and means for holding these parts rigidly in their different adjusted positions.

Another object of the invention is to provide an adjustable wedge member for holding the vertically movable post against lateral movement in its different adjusted positions.

Another object is to provide an improved pawl and ratchet mechanism for sustaining the load-supporting post in its different adjusted vertical positions.

Other objects and advantages of this invention will be more apparent from the following detailed description of one approved form of apparatus designed according to the principles of this invention.

In the accompanying drawings:

Fig. 1 is a vertical perspective view of the assembled horse.

Fig. 2 is a central, vertical section through the horse, on a larger scale.

Fig. 3 is a horizontal section taken substantially on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the wedge block.

Fig. 5 is a perspective view of the pawl.

The standard 1 is preferably in the form of a hollow metallic casting, having a broad supporting base 2 of any desired configuration adapted to firmly support the load and resist tilting forces. The smaller upper portion 3 of standard 1 encloses a vertical passage 4, in which the load-supporting standard 5 loosely fits and is vertically slidable. One side of the passage 4 is formed with vertical side walls 6 and 6′ which converge outwardly toward one another, as best shown in Fig. 3. At the opposite side of the passage 4, the standard is formed with a pocket 7 opening outwardly from the passage 4, the wall of this pocket which opposes the passage 4 being formed with one or more downwardly and inwardly inclined wedge surfaces 8, as shown in Fig. 2.

The post or bar 5 preferably has a modified I-beam cross-section, as best shown in Fig. 3. One vertical flange 9 of this bar is formed with spaced apart outwardly converging vertical corner faces 10 corresponding to the faces 6 and 6′ of the passage 4, so that when the post 5 is forced toward the left, as shown in Fig. 3, it will be wedged firmly between and against these side walls of the passage. The opposite vertical flange 11 of the bar 5 is formed with a series of downwardly facing ratchet teeth 12. The upper end of post 5 is provided with a suitable load supporting head or platform 13. This may be provided with suitable side wings 14 and 15, and a central axle-engaging concavity 16. The lower end of post 5 may be suitably enlarged in any manner, as indicated at 17 to prevent complete withdrawal of the post through the upper end of the standard.

The wedge block 18 fits slidably within the pocket 7, and has one vertical plane face 19 adapted to engage the outer faces of the ratchet teeth, or the adjacent surface of bar 5, and is formed on the opposite face with wedge surfaces 20 adapted to conform to and engage the wedge surfaces 8 within the standard. It will be apparent that as the wedge block 18 is forced downwardly, it will wedge itself between the standard and post 5, and force the post toward the opposite wall of the passage 4 so that the vertical corner faces 10 on the post will firmly wedge themselves between the converging surfaces 6 and 6′ within the standard. The

post will thus be held rigidly against any lateral movements.

The wedge block 18 is formed with a central cavity, adapted to movably house the load-supporting pawl 22. The cavity 21 is formed with a semi-cylindrical lower surface 23 adapted to pivotally support the rounded lower edge 24 of the pawl. The outwardly and upwardly projecting tooth 25 at the upper end of pawl 22 is adapted to selectively engage one of the teeth 19 on bar or post 5. A pair of side arms 26 project outwardly and downwardly from the lower side edges of pawl 22, through passages 27 in the wedge block, and may be provided with enlarged weighted ends 28 which may conveniently be positioned within the spaces at the sides of the web 29 of the bar 5. These weighted arms 26 serve as counter-weights to hold the pawl or dog 22 normally in engagement with the ratchet teeth 19. A finger 30 projects from the opposite face of pawl or dog 22 outwardly through the slot or opening 31 in the side wall of standard 1. A similar finger 32, formed on the wedge block 18, also projects out through the opening 31 directly beneath the finger 30, as shown in Figs. 1 and 2. It will be apparent that by grasping the two fingers 30 and 32 with one hand, the finger 30 will be depressed and thus bring the pawl 22 back out of engagement with the ratchet teeth. At the same time, the entire pawl and wedge block assembly may be lifted by pulling upwardly upon the finger 32, so as to release the wedging engagement between block 18 and the load-supporting post 5. When the fingers 30 and 32 are released, the pawl and wedge block will both move automatically to operative positions when a load is placed upon the post 5.

In operation, the pawl and wedge block are first released in the manner just described, by grasping the fingers 30 and 32 and lifting upwardly, and then the post 5 is pulled up by grasping the head 13 until it is at the desired height. The fingers 30 and 32 are then released and the post 5 pressed downwardly, and it will automatically become locked in this position. One of the teeth 19 will engage the tooth 25 of the pawl or dog 22, thus forcing this pawl downwardly, which in turn will force the wedge block 18 downwardly. The wedge surfaces 20 engaging the stationary wedge surfaces 8 in the standard 1 will force the wedge block 18 toward the left (Fig. 2), which will in turn rigidly clamp the wedging surfaces 10 at the opposite side of post 5 between the walls 6 and 6′ of the passage 4 in the standard. The greater the load placed upon post 5, the more firmly and rigidly will the post be clamped in this position. All side-play will be eliminated, and the standard 1 and post 5 will form substantially a single rigid unit. The load to be sustained must be lifted either by hand or by a suitable lifting jack and placed upon the load-supporting head 13.

It will be apparent that the form and proportions of the various parts of this device could be greatly varied, and still operate according to the principles of this invention. The pawl or dog 22 might be omitted entirely, and the horse would still operate under certain loads, depending upon the wedge 18 entirely for locking the post against both vertical and lateral movements. However, the device is more positive and practicable when the pawl is used, as shown and described. On the other hand, the wedge block 18 might be replaced by a fixed portion of the standard 1, and the pawl 22 relied upon entirely to force the post 5 into wedging engagement with the opposite walls 6 and 6′ of the passage 4. In such case, however, it would be desirable to have the pawl 22 tilt at a greater angle to the vertical, so that there would be a greater horizontal component of the load placed upon the pawl. It is to be understood that all such modifications are within the scope of the invention as herein disclosed and claimed.

We claim:

1. A horse comprising a standard having a vertical passage therein, a load-supporting post adjustable vertically in the passage, a wedge movable vertically between one wall of the passage and the post, a pawl and ratchet mechanism between the wedge and post for supporting the post in adjusted position, and outwardly projecting fingers on both the pawl and wedge which may be simultaneously grasped and moved toward one another for moving these members to inoperative positions.

2. A horse comprising a standard, a ratchet bar movable longitudinally therethrough, a slidable block adapted to be wedged between the standard and bar, and a pawl mounted in the block and adapted to adjustably engage the ratchet.

3. A horse comprising a standard, a ratchet bar movable longitudinally therethrough, a slidable block adapted to be wedged between the standard and bar, a pawl mounted in the block and adapted to adjustably engage the ratchet, and means for moving the block and pawl to inoperative positions.

4. A horse comprising a standard, a ratchet bar movable longitudinally therethrough, a slidable block adapted to be wedged between the standard and bar, a pawl mounted in the block and adapted to adjustably engage the ratchet, and manually operable fingers projecting outwardly from the block and pawl whereby each may be moved to inoperative positions.

5. A horse comprising a standard, having a vertical passage therein, the walls of the passage comprising a pair of vertical converging surfaces at one side thereof, a load supporting post adjustable vertically in the

passage, the post having vertical surfaces at one side adapted to interfit between the converging surfaces in the standard, and a wedge positioned in the standard adjacent the opposite side of the post for wedging the post into rigid engagement with the converging surfaces.

6. A horse comprising a standard, having a vertical passage therein, the walls of the passage comprising a pair of vertical converging surfaces at one side thereof, a load supporting post adjustable vertically in the passage, the post having vertical surfaces at one side adapted to interfit between the converging surfaces in the standard, the standard being formed with a pocket at the opposite side from the converging surfaces, the opposed wall of the pocket inclining inwardly and downwardly toward the passage, and a wedge member positioned in the pocket and adapted to force the post toward the converging surfaces.

7. A horse comprising a standard, having a vertical passage therein, the walls of the passage comprising a pair of vertical converging surfaces at one side thereof, and a pocket formed in the standard at the opposite side of the passage, the opposed wall of the pocket inclining inwardly and downwardly toward the passage, a load-supporting post movable vertically in the passage, the post having vertical surfaces at one side adapted to interfit between the converging surfaces in the standard, and having a vertical series of ratchet teeth at the other side, a wedge block positioned in the pocket and adapted when forced downwardly to wedge the post against the converging surfaces, and a pawl pivotally mounted in the wedge block and adapted to engage the ratchet teeth to prevent downward movement of the post past the wedge block.

8. A horse comprising a standard, having a vertical passage therein, the walls of the passage comprising a pair of vertical converging surfaces at one side thereof, and a pocket formed in the standard at the opposite side of the passage, the opposed wall of the pocket inclining inwardly and downwardly toward the passage, a load-supporting post movable vertically in the passage, the post having vertical surfaces at one side adapted to interfit between the converging surfaces in the standard, and having a vertical series of ratchet teeth at the other side, a wedge block positioned in the pocket and adapted when forced downwardly to wedge the post against the converging surfaces, a ratchet pivotally mounted in the wedge-block and adapted to engage the ratchet teeth, there being a slot in the outer wall of the standard communicating with the pocket, and fingers projecting from the pawl and wedge block through this slot for moving these members to inoperative positions.

9. A horse comprising a standard, a load-supporting post adjustable vertically in the standard and formed with three spaced apart vertical clamping surfaces which would have a triangular relation with one another if the surfaces were extended, there being a pair of vertical clamping surfaces in the standard having a similar angular relationship to two of the surfaces on the post and between which the post is adapted to be wedged, and movable means adapted to be wedged between a portion of the standard and the third clamping surface on the post.

10. A horse comprising a standard, formed with a pair of vertical clamping surfaces positioned at an angle of less than 180° with each other, a load supporting post adjustable vertically in the standard, said post having two spaced apart vertically extending corner clamping surfaces positioned to be engaged with a wedging action between the clamping surfaces in the standard, and a movable member mounted in the standard and positioned to be wedged between a portion of the standard and a third side of the post whereby the post will be forced into wedging engagement with the clamping surfaces in the standard.

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