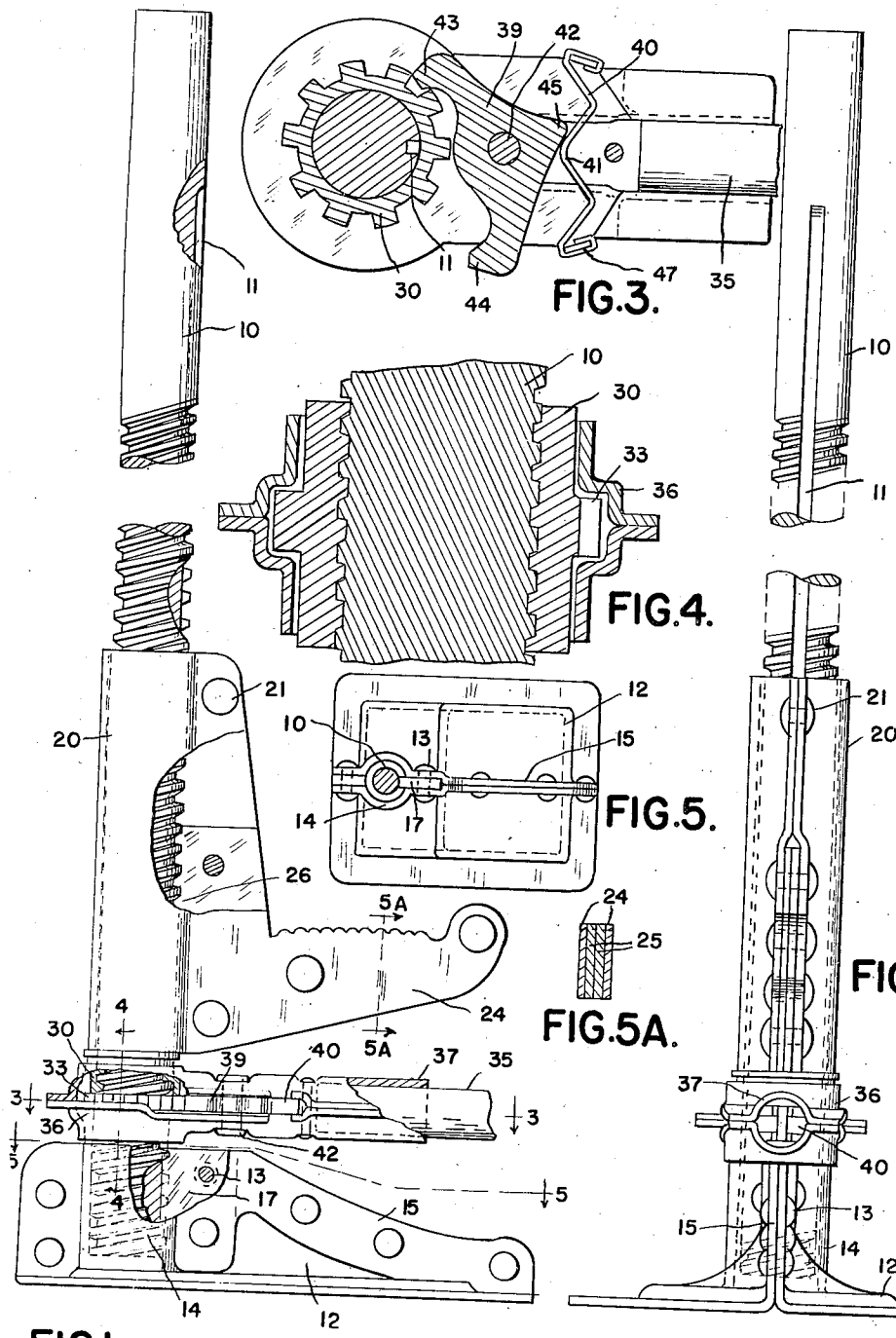
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LIFTING JACK

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LIFTING JACK

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This invention relates to improvements in lifting jacks, and particularly to jacks of that compact and portable class which are adapted to be carried in the tool box of a motor vehicle, to enable lifting the car when necessary, as to enable changing a tire or performing some other servicing operation.

An important object of the invention is to provide such a jack which is so inexpensive in construction that it may be furnished as a part of the original equipment, supplied with a motor vehicle by the manufacturer thereof, and which is lighter in weight, more positive and secure in operation, and less costly to construct and assemble than previously known devices of this character.

An important object is to provide an improved construction of the class indicated having a lifting cage adapted to travel up and down a screw shaft, which cage is provided with improved means to prevent unwanted turning of the same with respect to the screw shaft while the cage is being lifted and lowered.

A further object is to provide such a jack which is more stable in proportion to the size of its base than are previously known lifting jacks of the class indicated, whereby the danger of tipping or sliding of the jack during use is minimized.

Other objects and advantages will be apparent from the following description, wherein reference is made to the accompanying drawing illustrating a preferred embodiment of my invention and wherein similar reference numerals designate similar parts throughout the several views.

In the drawing:

Figure 1 is a side elevational view of a lifting jack constructed in accordance with the invention, with parts broken away to show the same in section, and with a central portion of the screw shaft broken away and omitted.

Figure 2 is a front elevational view of the jack, also with a central portion of the screw shaft broken away.

Figures 3, 4, 5, and 5A are sectional views taken substantially on the lines 3—3, 4—4, 5—5 and 5A—5A respectively of Figure 1, and looking in the direction of the arrows, Figures 3 and 4 being upon larger scales, and Figure 5 upon a smaller scale than Figure 1.

Referring now to the drawing: reference character 10 designates a screw shaft, which is adapted to be fixedly supported in upright position in a base 12, from which it is removable, however, in the interests of compact storage of the jack when not in use. The base will be seen to be formed in two sections, fastened together by rivets 13 passed through abutting flanges 15, which flanges also cooperate to form a stiffening web. Near one end of the base the flanges are provided with complementary semi-cylindrical portions which cooperate to form a socket, 14, into which the screw shaft is adapted to be slidably fitted. A longitudinal slot or keyway 11 extends along the screw shaft in a straight line being open at the lower end of the shaft. A sheet metal key 17, positioned between the two halves of which the base is formed, and held by some of the rivets which also secure together the two sections of the base, is adapted to project into the keyway 11. The key 17 is so located as to allow insertion of the shaft only with the keyway upon the side thereof toward the end of the base farthest from the socket.

A cage 20, also formed of sheet metal, encircles and is slidable upon the screw shaft, having its bearing upon the top surfaces of the threads of the shaft. The body of the cage is formed of a single sheet of metal, wrapped to cylindrical contour to provide the slidable portion which fits over the shaft, the meeting edges being secured together as by rivets 21 or the like, and projecting to provide a lateral flange 23 and integral arms, 24, extending laterally from the lower end thereof to provide a support for the load. The arm formed by the sections 24 may be strengthened by an interposed reenforcing plate 25, held by the same rivets and projecting inwardly far enough to extend into the keyway 11 in the screw shaft to act as a guide, preventing turning movement of the cage with respect to the shaft. The keying portion of the interposed plate is designated 26.

The cage is adapted to be lifted, to raise the load, by means of a nut 30, rotatable, through the agency of a pawl and ratchet assembly, by means of a handle 35. The configuration of the nut is best shown in Figures 3 and 4, from which it will be seen to be provided, medially of its length, with a peripheral flange 33, cut away at uniform intervals to provide ratchet teeth. The nut is caged in and rotatable with respect to a sheet metal casing 36, which is elongated in one direction and contoured to provide an open-ended socket portion 37, adapted to receive the handle 35. The casing 36 also serves as a support for the pawl 39 and its spring 40. The pawl is swingable upon a pin 42, and provided with a tooth portion, as 43—44, at each end. A pointed extremity 45 integral with the pawl projects rear-

wardly from the pin 42, and is adapted to cooperate with the spring 40, the central portion 41 of which is pointed to project in the opposite direction, its shape being such as to impart an overcenter action to the pawl by tending to force the pointed extremity 45 of the latter to lie upon one side or the other of the central pointed section 41 of the spring. The spring is of leaf form, and secured at both ends, by means of extremities which are wrapped to such contour as to adapt them to be fitted over positioning lugs 47. The resiliency of the spring is sufficient to allow either tooth of the pawl to ratchet over the teeth in the normal manner, and to tend to maintain one tooth in proper yieldable engagement with the ratchet, until the pawl is swung far enough to force the central portion 45 over center, which drives the opposite end of the pawl into engagement with the ratchet toothed flange 30 and yieldably engages these parts in like manner.

It will be seen that in order to lift a load, after placing the arm section 24 therebeneath, it is simply necessary to rotate the nut 30, by reciprocating the handle about the axis of the shaft, the pawl being of course turned into the position required to advance the nut upwardly along the threads of the shaft, while in order to lower the load, the pawl is simply shifted to bring its opposite toothed end in engagement with the ratchet formed upon the nut, whereafter reciprocation of the handle in like manner will cause it to travel down the shaft to lower the load.

Great stability of the jack in proportion to its size is insured by the fact that the load-carrying arm portion 24 is maintained in vertical alignment with the base, the load being carried directly over the central portion of the base, by reason of the offset positioning of the screw shaft.

What I claim is:

1. A base for supporting the screw shaft of a lifting jack of that variety having a fixed screw shaft and a traveller nut movable therealong to raise and lower the load, said base comprising a pair of sheet metal sections having substantially coplanar bottom surfaces and having upturned abutting flange portions secured together and cooperating to form a stiffening rib, cooperating portions of said flanges being contoured to form a socket adapted to receive the screw shaft.

2. A lifting jack comprising a base of substantially rectangular form having a socket located near one end thereof, keying means carried by the base and projecting into the socket, a screw shaft adapted to be slidably fitted into and supported by the socket, said shaft having a cooperating keyway therein extending longitudinally upwardly in a substantially straight line, the lower end of said key-way receiving said keying means, which thereby holds the shaft against turning, a cage slidable along the shaft, a keying portion carried by the cage and projecting into the keyway to prevent rotation of the cage with respect to the shaft and base, and jacking means for forcing the cage upwardly along the shaft.

3. A lifting jack comprising a socketed base, keying means carried by the base and projecting into the socket, a screw shaft adapted to be removably fitted into and supported by the socket, said shaft having a cooperating keyway therein extending longitudinally upwardly in a substantially straight line, the lower end of said keyway receiving said keying means, which thereby holds the shaft against turning, a cage slidable along the shaft, a keying portion carried by the cage and projecting into the keyway to prevent rotation of the cage with respect to the shaft and base, and jacking means for forcing the cage upwardly along the shaft.

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