

No. 750,740.

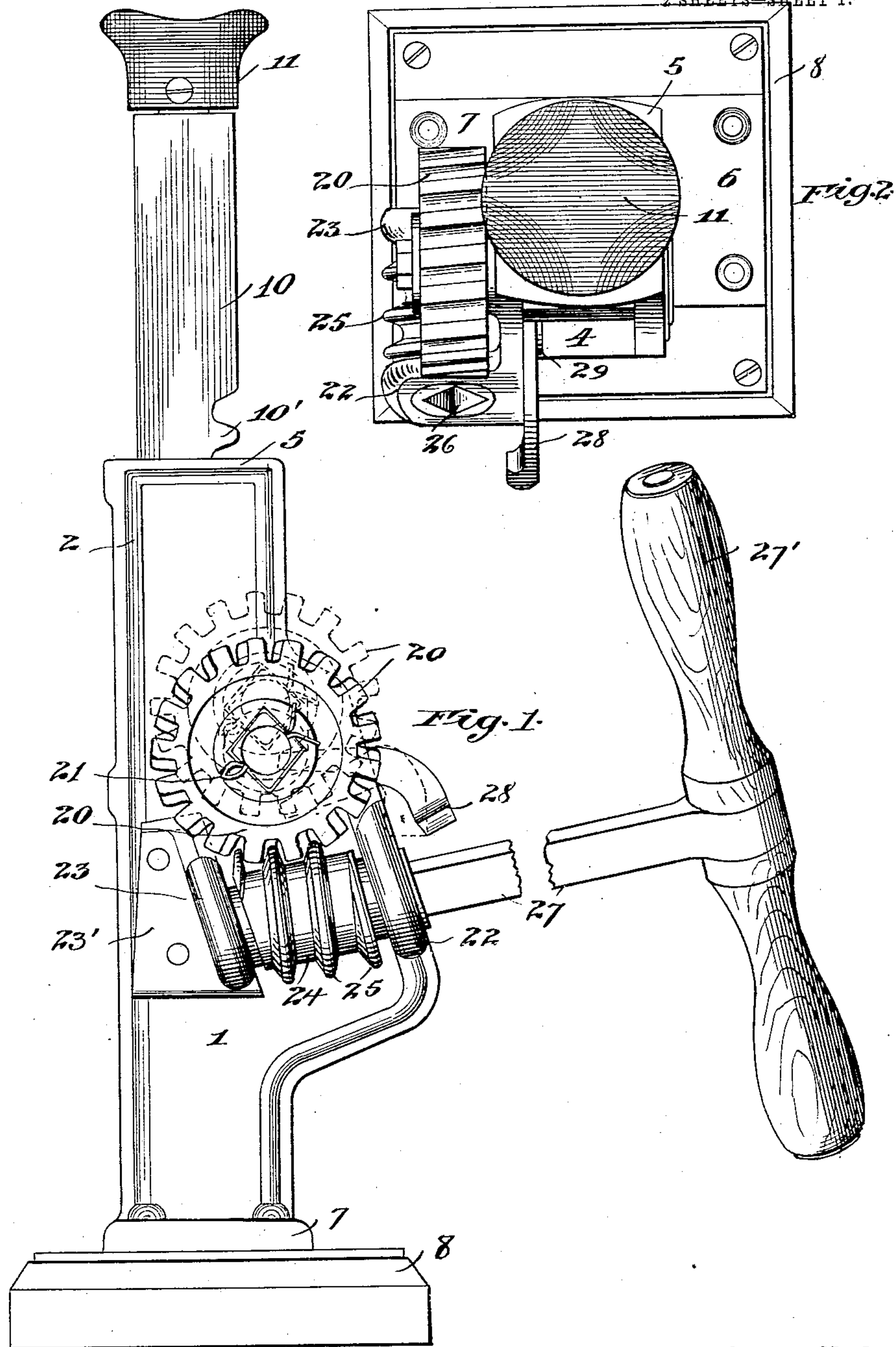
PATENTED JAN. 26, 1904.

R. H. WELLES.
JACK.

APPLICATION FILED AUG. 14, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses,
S. J. Mann,
S. N. Ford.

Inventor,
Richard H. Welles,
By *Offield, Towle & Lathrop*
Attys.

No. 750,740.

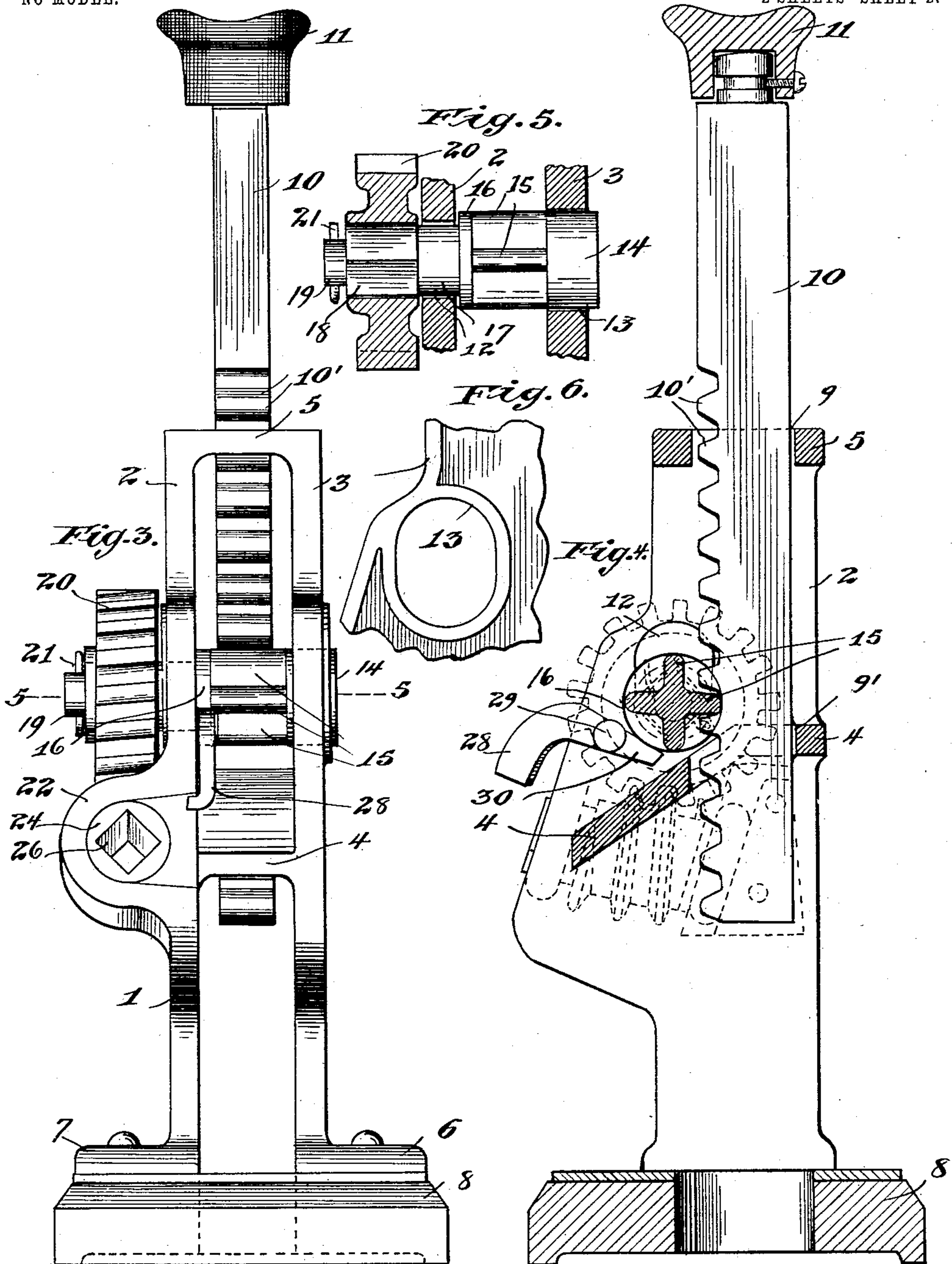
PATENTED JAN. 26, 1904.

R. H. WELLES.
JACK.

APPLICATION FILED AUG. 14, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses,
J. J. Mann,
S. H. Ford.

Inventor,
Richard H. Welles,
By Offield, Towle & Luthin,
Attys.

UNITED STATES PATENT OFFICE.

RICHARD H. WELLES, OF KENOSHA, WISCONSIN.

JACK.

SPECIFICATION forming part of Letters Patent No. 750,740, dated January 26, 1904.

Application filed August 14, 1903. Serial No. 169,491. (No model.)

To all whom it may concern:

Be it known that I, RICHARD H. WELLES, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented certain new and useful Improvements in Jacks, of which the following is a specification.

This invention relates to jacks, and more particularly to a form of jack adapted to be used in lifting automobiles and the like, where a small jack of great strength and compactness is required and carried as part of the appliances usually composing an automobile outfit, although I do not limit myself to any particular size nor to the specific construction here shown.

Among the salient objects of this invention are to provide a jack of the character designed for lifting or forcibly moving heavy bodies with little effort, to provide a jack of great strength the mechanism of which is compact and of the utmost simplicity and the manufacture of which is extremely economical, to provide a jack which is self-locking at any and every point of its lifting or lowering movement, and to provide a jack which may be quickly and snugly adjusted to the space into which it is to be placed by means other than the regular manipulation of the lifting mechanism, thus affording a great saving in time with each use thereof.

To the above ends the invention consists in the matter hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood therefrom, reference being had to the accompanying drawings, forming a part thereof, and in which—

Figure 1 is a side elevation of a jack embodying the invention with a portion of the handle-rod broken out to reduce the size of the figure. Fig. 2 is a top plan view of Fig. 1 without the handle. Fig. 3 is a front elevation of the jack. Fig. 4 is a vertical section of the jack. Fig. 5 is a sectional view of a detail taken on line 5 5, Fig. 3, showing fragmentary portions of the frame-walls. Fig. 6 is a fragmentary view of the side wall 3, showing the form of the slot therein.

Similar numerals refer to similar parts in all the figures.

Referring to the drawings, 1 designates the frame or standard, composed of the side walls 2 and 3, which are connected by the web-like portion 4 and the top 5, said standard being preferably cast in one piece and having the flanges 6 and 7 for securing it to the base-block 8. In the top 5 and in the web-like portion 4 are formed the apertures 9 and 9', Fig. 4, within which is arranged to reciprocate the rack-bar 10, provided with the teeth 10' and the pivotally-mounted head 11.

In the side walls 2 and 3, respectively, oppositely disposed with relation to each other and adjacent the path of the rack-bar 10, are formed the oblong apertures or slots 12 and 13, the slot 12 being somewhat smaller than the slot 13 for the purpose hereinafter described. Within these slots, which form bearings therefor, is mounted to revolve and to reciprocate the shaft 14, preferably of one-piece construction (see Fig. 5) and comprising the pinion-like portion 15, adapted to engage the teeth of the rack-bar, the reduced bearing portion 17, adapted to fit into the smaller slot 12, an annular shoulder portion 16, which prevents the shaft 14 from sliding out of place, the square portion 18, and the reduced end portion 19. Upon the square portion 18 is securely mounted the gear or spirally-toothed wheel 20, which is held in place by the cotter-pin 21.

Upon the outside and near the front edge of the frame-wall 2 is integrally formed the lug 22, and adjacent the back edge of said wall a second lug 23 is securely mounted, so as to register with the lug 22, said lug 23 in the present instance being formed upon a plate 23', which is riveted to the wall 2, as clearly shown in Fig. 1. In each of said lugs is formed a bearing-aperture, within which is mounted to revolve the shaft 24, having thereon the worm 25, adapted to normally engage the teeth of the wheel 20. Within the outer end of the shaft 24 is formed the socket 26, Fig. 3, into which is adapted to fit the handle-rod 27, upon which is mounted the handle 27', by means of which said shaft and said worm are made to

turn, transmitting a revolving motion to the wheel 20 and that in turn to the shaft 14, the pinion-like portion of which by engagement with the teeth 10' of the rack-bar 10 moves
 5 said rack-bar upwardly or downwardly, according to the direction in which the handle is turned. The handle may be made in the form of a crank, if desired.

10 An important feature of this invention now to be described is the mechanism by which the shaft 14 is reciprocated within the slots 12 and 13 to disengage the wheel 20 from the worm 25. To this end the latch 28 is provided and pivotally mounted on the inner side
 15 of the wall 2, as indicated at 29, Fig. 4. The end portion 30 of said latch projects underneath and engages the shoulder portion 16 of the shaft 14, so that when the latch 28 is pressed downwardly said shaft will be raised
 20 in the slots 12 and 13, carrying the wheel 20 out of engagement with the worm 25, which will permit it to revolve freely, thus allowing the rack-bar to descend by its own weight. If it is desired to raise the rack-bar to any po-
 25 sition before placing the jack under the weight of the load to be lifted, this can readily be done by grasping the head 11 with the hand and lifting it, which by reason of the engagement of the rack-bar with the pinion-like por-
 30 tion of the shaft 14 will lift said shaft in the slots 12 and 13, carrying the wheel 20 out of engagement with the worm 25, thus allowing it to turn freely as said rack-bar is raised to the desired position of adjustment.

35 Another important feature in the construction of this invention is the relative arrangement of the lifting mechanism, whereby the weight to be lifted tends to bring more positively together the points of contact between
 40 the gear 20 and the worm 25. This is due to the fact that the worm is placed beneath the gear 20 and that the weight is transmitted from the rack-bar to the pinion-shaft 14 and thence to the gear 20 at a point above that of
 45 the engagement of the worm with said gear. This arrangement also enables the adjustment to be made by lifting the rack-bar by hand, and thereby raising the pinion-shaft and the
 50 gear out of engagement with the worm sufficiently to permit of its free revolution, as above described. This feature not only adds to the life of the jack by insuring full and positive intermeshing between the worm and the gear, but also insures that the heavier the
 55 load the more positively will the working parts interengage, thus obviating the possibility of slipping or falling back of the rack-bar under its load.

60 It is evident that variations may be made in the invention without departing from the spirit thereof, and I do not, therefore, limit myself to the particular form and arrangement shown.

I claim as my invention—

1. A lifting-jack, comprising in combina- 65
 tion a standard, a rack-bar mounted to reciprocate longitudinally therein, a pinion-shaft mounted within said standard adjacent and in
 transverse relation to the toothed side of said rack-bar, a pinion rigid upon said pinion-shaft 70
 and operatively engaging said rack-bar, a worm-gear non-rotatably mounted upon said pinion-shaft, a worm-shaft provided with a worm and revolubly but otherwise immov- 75
 ably mounted upon said standard below and in operative engagement with said gear, said worm-gear and its revoluble support being capable of rising and falling movement, where-
 by the gear and worm are brought more posi- 80
 tively into engagement under weight upon the rack-bar, and means for actuating said worm-shaft.

2. A lifting-jack, comprising in combina- 85
 tion a standard provided with oppositely-disposed elongated bearing-apertures, a pinion- 90
 shaft seated within said bearing-apertures and provided with a pinion rigid thereon, a rack-bar mounted to reciprocate vertically in said standard adjacent to and operatively en- 95
 gaged with said pinion, a worm-gear mounted upon said pinion-shaft, a worm-shaft revolubly but otherwise immovably mounted in tan-
 gential relation to, and below the periphery of said worm-gear and provided with a worm operatively engaging said gear, and means for 95
 revolving said worm-shaft.

3. A lifting-jack, comprising in combina- 100
 tion a standard provided with oppositely-disposed and vertically-elongated bearing-aper- 105
 tures, a pinion-shaft seated within said bearing-apertures and provided with a pinion rigid thereon, a rack-bar mounted to reciprocate vertically in said standard adjacent to and operatively engaged with said pinion, a worm-gear mounted upon said pinion-shaft, 110
 a worm-shaft revolubly but otherwise immovably mounted in tangential relation to, and below the periphery of said worm-gear and provided with a worm operatively engaging said gear, a leverage mechanism arranged for 115
 positively lifting said pinion-shaft to carry the worm-gear out of mesh with the worm, and means for rotating said worm-shaft, sub-
 stantially as described.

4. A lifting-jack, comprising in combina- 120
 tion a standard provided with oppositely-disposed and vertically-elongated bearing-aper- 125
 tures, a pinion-shaft seated within said bearing-apertures and provided with a pinion rigid thereon, a rack-bar mounted to reciprocate vertically in said standard adjacent to and operatively engaged with said pinion, a worm-gear mounted upon said pinion-shaft, a worm-shaft revolubly but otherwise immovably mounted in tangential relation to, and 125
 below the periphery of said worm-gear and

provided with a worm operatively engaging said gear, a leverage mechanism for positively lifting said pinion-shaft to carry the worm-gear out of mesh with the worm comprising
5 a lever pivotally mounted between its ends upon the standard and having its engaging end arranged to extend transversely to and below said pinion-shaft and its opposite end extending out to form a lever-handle, and
10 means for rotating said worm-shaft, substantially as described.

5. A lifting-jack comprising in combination, a standard provided with oppositely-disposed bearing-apertures, a pinion-shaft seated
15 within said apertures, a pinion rigidly mounted upon said shaft, a rack-bar mounted to reciprocate longitudinally within said standard, in operative engagement with said pinion, a worm-gear rigidly mounted upon said
20 pinion-shaft, a worm-shaft with worm thereon revolubly mounted upon said standard and in such operative engagement with said worm-

gear that weight upon said rack-bar makes more positive the mesh between said gear and said worm, and means for actuating said worm-shaft, for the purpose described. 25

6. In a lifting-jack the combination of a frame, a rack-bar mounted to reciprocate therein, a pinion operatively engaged with said rack-bar, a worm-gear connected to rotate positively with said pinion and a worm
30 revolubly but otherwise immovably journaled adjacent to and controlling the worm-gear, the bearing-supports of said worm-gear being constructed to permit movement of the latter
35 into and out of mesh with the worm and the arrangement of said bearings being such as to induce a relative movement of the worm-gear into more positive mesh with the worm under the increase of load upon the rack-bar.

RICHARD H. WELLES.

Witnesses:

SAMUEL N. POND,
FREDERICK C. GOODWIN.